#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 21.10.98 Test oil : 150 4113

Combination No. : 0 401 846 506

Injection pump

Pump designation : PE6P110A320RS483-1 EP type number : 0 411 816 160

Governor

Governer design. : RQV250...1200PA918

: -1

Governer no. : 0 421 813 773

Cust. part No. :

Customer-spec. information : VOLVO Customer : TD71FS Motor : 180.0 Power KW

#### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

40 temp. °C Tolerance °C : +- 2.0

Overflow valve : 2 417 413 096

Inlet press. bar : 1.5

Test nozzle holde

: 0 681 343 009 assembly

Opening pressure

173.5 bar Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 1.5 x length mm :

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 3.05 : **←** 0.05 Tolerance mm Check

: +- 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance "NW : +- 0.75

Start of delivery mark

Barrel no. : 1

#### BASIC SETTING

Del. quantity

cm3/1000 strokes : 143.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

cm3/1000s. : +- 4.0

Spreed

Tolerance

cm3/1000 strokes : 4.0

A01

	Rated speed rpm : 1330
Check tolerance	Rack travel in mm : 16.50 Tolerance mm : +- 1.30
Rated speed rpm : 250	
4	-
Rack travel in mm : 5.40 - Tolerance mm : +- 0.10 -	- Rated speed rpm : 700 - Aneroid pressure
Del. quantity	- hPa : 1200
cm3/1000 strokes : 18.0	- Del. quantity - cm3/1000 strokes : 143.0
Tolerance - cm3/1000 strokes : +- 2.0 -	Tolerance
Check tolerance	- cm3/1000 strokes : +- 1.0
cm3/1000s. : +- 5.0 Spreed	- Check tolerance - cm3/1000s. : +- 4.0
Tolerance	- Spreed
cm3/1000 strokes : 3.0 Check tolerance	- Tolerance - cm3/1000 strokes : 4.0
cm3/1000s. : 6.0	- Check tolerance
1	- cm3/1000s. : 7.5
(B) SETTING OF INJECTION PUMP	
WITH GOVERNOR	- CONTROL LEVER
	L CONTROL LEVER
GUIDE SLEEVE TRAVEL	control lever
Rated speed rpm : 1260	- position degree : 113.0 - tolerance degree : +- 4.0
guide sleeve	-
travel mm : 7.80 + Tolerance mm : + 0.10	- RATED SPEED - rack travel mm : 12.10
+	- Rated speed rpm : 1245
Rated speed rpm : 250	- Tolerance 1/min : +- 5
travel mm : 1.20	- - rack travel mm : 4.00
Tolerance mm : +- 0.10	- Rated speed rpm : 1400
Rated speed rpm : 380	- Tolerance 1/min : +- 15
guide sleeve	- rack travel mm : 0.50
travel mm : 2.45 + Tolerance mm : + 0.15 +	- Tolerance mm : +- 0.50 - Rated speed rpm : 1500
+	- Nation Speed (pm 1 1999
Rated speed rpm : 500 + guide sleeve +	-
travel mm : 3.10	
Tolerance mm : +- 0.20	- LOW IDLE
Rated speed rpm : 1400	• •
guide sleeve	- control lever
travel mm : 9.15 + Tolerance mm : + 0.15 +	- position degree : 60.0 - tolerance degree : +- 4.0
+	•
GUIDE SLEEVE POSITION	- Setting point w/out bumper spring -
	- Rated speed rpm : 100
control lever	- CRT mm min. :> 6.80
position degree : -1	

## Testing:

Rated speed rpm : 250 rack travel mm : 5.40 Tolerance mm : +- 0.10

Rated speed rpm : 350

ANEROID/ALTITUDE COMPENSATOR TEST

#### SETTING

500 Rated speed rpm : Pressure hPa : 1200 rack travel mm : 13.15 Tolerance mm : +- 0.05

Rated speed rpm : 500 Pressure hPa

#### **MEASUREMENT**

Rated speed rpm : 500

270 Pressure hPa 0.30 rack travel mm : : +- 0.10 Tolerance mm

Pressure hPa 700 rack travel mm : 2.65 Tolerance mm : +- 0.05

## FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

1200 hPa Rated speed rpm : 1000

Del. quantity

cm3/1000 strokes : 140.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  3.0

Check tolerance

: +- 5.0 cm3/1000s.

Aneroid pressure

hPa Rated speed rpm : 700 Del. quantity

cm3/1000 strokes : 86.5

Tolerance

cm3/1000 strokes :  $\leftarrow$  1.5

Check tolerance

: +- 4.5 cm3/1000s.

## STARTING FUEL DELIVERY

Rated speed rpm rack travel mm : 20.50 : +- 0.50 Tolerance mm Del. quantity

cm3/1000 strokes : 185.0

Tolerance

cm3/1000 strokes : + 15.0

Check tolerance

cm3/1000s. : +- 19.0

## LOW IDLE

Rated speed rpm : 250

Rack travel in mm: 5.40 Tolerance mm : +- 0.10

Del. quantity

cm3/1000 strokes : 18.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  2.0

Check tolerance

: +-5.0 cm3/1000s. Spreed

Tolerance

cm3/1000 strokes : 3.0

Check tolerance

6.0 cm3/1000s.

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 21,10,98 : ISO 4113 Test oil

Combination No. : 0 401 846 703

Injection pump

Pump designation : PE6P110A720RS3006 EP type number : 0 411 816 703

Governor

Governer design. : RQV250...1100PA242R

Governer no. : 0 421 813 142

Cust. part No. :

Customer-spec. information : SCANIA Customer : DS11 01 Motor

## TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C Tolerance °C

Overflow valve : 2 417 413 096

Inlet press. bar : 1.5

Test nozzle holde

: 0 681 343 009 assembly

Opening pressure

173.5 bar : **←** 1.5 Tolerance bar

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter: 1.5

x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar: 26.0 Tolerance bar : + 1.0

Prestroke mm 3.35 : +- 0.05 Tolerance mm Check : +- 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

: +- 0.70 tolerance °NW

Start of delivery mark

Barrel no. : 1

#### BASIC SETTING

Del. quantity

cm3/1000 strokes : 162.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

cm3/1000s. : +- 3.0

Spreed

Tolerance

cm3/1000 strokes : 6.0

Check tolerance cm3/1000s. : 8.0	+ RATED SPEED + rack travel mm : 12.20 + Rated speed rpm : 1145 + Tolerance 1/min : +- 5
Rated speed rpm : 225	rack travel mm : 4.00
Rack travel in mm : 6.40 Tolerance mm : +- 0.10 Del. quantity	Rated speed rpm : 1275 Tolerance 1/min : +- 15
cm3/1000 strokes : 17.0 Tolerance	rack travel mm : 0.50 Tolerance mm : + 0.50
cm3/1000 strokes : +- 2.0 Spreed Tolerance	Rated speed rpm : 1400
cm3/1000 strokes : 2.0 Check tolerance	
cm3/1000s. : 4.0	LOW IDLE
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	control lever position degree : 10.0 tolerance degree : +- 4.0
GUIDE SLEEVE POSITION	Setting point w/out bumper spring
	Rated speed rpm : 100
control lever position degree : - 1	CRT mm min. : > 7.80
Rated speed rpm : 1100	Testing:
Rack travel in mm : 16.50 Tolerance mm : +- 1.30	Rated speed rpm : 250 rack travel mm : 6.40 Tolerance mm : + 0.10
FULL LOAD DELIVERY AT FULL LOAD STOP	rack travel mm : 2.00 Rated speed rpm : 400
Rated speed rpm : 1100 Aneroid pressure	Tolerance 1/min : + 30
hPa : 700 Del. quantity	İ
cm3/1000 strokes : 162.0 Tolerance	ANEROID/ALTITUDE COMPENSATOR TEST
cm3/1000 strokes : +- 1.0 Check tolerance	‡
cm3/1000S. : +- 3.0 Spreed	+ SETTING
Tolerance cm3/1000 strokes : 6.0	Rated speed rpm : 500 Pressure hPa : 700
Check tolerance cm3/1000s. : 8.0	rack travel mm : 13.25 Tolerance mm : + 0.05
	+ Rated speed rpm : 500 + Pressure hPa : -
CONTROL LEVER	rack travel mm : 12.15 Tolerance mm : + 0.05
control lever position degree : 64.0 tolerance degree : + 4.0	MEASUREMENT

Rated speed rpm : 500

Pressure hPa : 260 rack travel mm : 12.40 Tolerance mm : + 0.10

Pressure hPa : 335 rack travel mm : 12.85 Tolerance mm :  $\leftarrow$  0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa 700 600 Rated speed rpm : Del. quantity

cm3/1000 strokes : 167.0 Tolerance

cm3/1000 strokes : +- 2.5

Check tolerance

cm3/1000s. : <del>+-</del> 5.0

Aneroid pressure

hPa Rated speed rpm : 500

Del. quantity

cm3/1000 strokes : 135.0

Tolerance

cm3/1000 strokes : +-2.0

Check tolerance

cm3/1000s. : **←** 4.0

STARTING FUEL DELIVERY

Rated speed rpm : 100 rack travel mm : 20.50 : +- 0.50 Tolerance mm

Del. quantity

cm3/1000 strokes : 215.0

Tolerance

cm3/1000 strokes : +- 25.0

LOW IDLE

Rated speed rpm : 225

Rack travel in mm : 6.40 Tolerance mm : + 0.10

Del. quantity

cm3/1000 strokes : 17.0

Tolerance

cm3/1000 strokes : +- 2.0

Spreed

Tolerance

cm3/1000 strokes : 2.0

Check tolerance

cm3/1000s. 4.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 21.10.98 Test oil : ISO 4113

Combination No. : 0 401 846 758

Injection pump

Pump designation : PE6P110A320RS3108Z EP type number : 0 411 816 728

Governor

Governer design. : RQV250...1100PA920

Governer no. : 0 421 813 777

Cust. part No. :

Customer-spec. information Customer : VOLVO : THD100EB : 160.0 Motor

Power KW

## TEST BENCH REQUIREMENTS

Inlet line : 1

Test oil inlet

temp. °C Tolerance °C : +- 2.0

Overflow valve : 2 417 413 096

Inlet press. bar : 1.5

Test nozzle holde

: 0 681 343 009 assembly

Opening pressure

: 173.5 har Tolerance bar : +- 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter: 1.5 x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 3.05 Tolerance mm : + 0.05 Check

tolerance mm : + 0.10

Rack travel in mm: 10.50 Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300 : +- 0.50 Tolerance

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Start of delivery mark

Barrel no. : 1

## BASIC SETTING

Del. quantity cm3/1000 strokes : 123.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  1.0

Check tolerance cm3/1000s. : +- 4.0

Spreed

Tolerance

cm3/1000 strokes : 4.0

Check tolerance	
cm3/1000s.	: 7.5
Rated speed rpm	: 250
Rack travel in m	
Tolerance mm Del. quantity	: +- 0.10
cm3/1000 strokes	: 32.0
Tolerance cm3/1000 strokes	: +- 2.0
Check tolerance	. +- 2.0
cm3/1000s.	: +- 4.5
Spreed Tolerance	
cm3/1000 strokes	: 3.0
Check tolerance cm3/1000s.	: 6.0
(B) SETTING OF IN WITH GOVERNOR	WECTION PUMP
GUIDE SLEEVE TRAN	/EL
Rated speed rpm guide sleeve	: 950
travel mm	: 6.50
Tolerance mm	: +- 0.20
Rated speed rpm	: 250
guide sleeve travel mm	: 1.20
Tolerance mm	: +- 0.10
Rated speed rpm	: 500
guide sleeve	
travel mm Tolerance mm	: 4.50 : ← 0.40
roterance min	
Rated speed rpm guide sleeve	: 700
travel mm	: 6.50
Tolerance mm	: +- 0.20
Rated speed rpm	: 1100
guide sleeve	
travel mm	: 7.25 : +- 0.25
Tolerance mm	. — 0.23
GUIDE SLEEVE POSI	TION
control lover	
control lever	1

Rack travel in mm : 16.50 Tolerance mm : +- 1.30 FULL LOAD DELIVERY AT FULL LOAD STOP Rated speed rpm : 700 Aneroid pressure : 750 hPa Del. quantity cm3/1000 strokes : 123.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance : +- 4.0 cm3/1000s. Spreed Tolerance cm3/1000 strokes : 4.0 Check tolerance : 7.5 cm3/1000s. CONTROL LEVER control lever position degree : 65.0 tolerance degree : +- 4.0 RATED SPEED rack travel mm : 9.50 Rated speed rpm : 1165 Tolerance 1/min : +- 5 rack travel mm : 4.00 Rated speed rpm : 1240 Tolerance 1/min : +- 15 LOW IDLE control lever position degree : 11.0 tolerance degree : +- 4.0 Setting point w/out bumper spring Rated speed rpm : 100 CRT mm min. : > 6.80

Rated speed rpm : 1175

position degree : - 1

#### Testina:

Rated speed rpm : 250 rack travel mm : 5.40 Tolerance mm : +- 0.10

rack travel mm : 2.00
Rated speed rpm : 380
Tolerance 1/min : +- 30

# ANEROID/ALTITUDE COMPENSATOR TEST

## **SETTING**

Rated speed rpm : 500
Pressure hPa : 750
rack travel mm : 10.55
Tolerance mm : +- 0.05

Rated speed rpm : 500
Pressure hPa : rack travel mm : 9.70
Tolerance mm : +- 0.10

#### **MEASUREMENT**

Rated speed rpm : 500

Pressure hPa : 310 rack travel mm : 10.30 Tolerance mm : + 0.10

Pressure hPa : 265 rack travel mm : 9.95 Tolerance mm : + 0.05

## FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa : -Rated speed rpm : 700

Del. quantity

cm3/1000 strokes : 107.0

Tolerance

cm3/1000 strokes : +- 1.5

Check tolerance

cm3/1000s. : +- 4.0

## STARTING FUEL DELIVERY

Rated speed rpm : 100

A09

Del. quantity

cm3/1000 strokes : 175.0

Tolerance

cm3/1000 strokes : +- 15.0

### LOW IDLE

Rated speed rpm : 250

Rack travel in mm : 5.40
Tolerance mm : +- 0.10

Del. quantity

cm3/1000 strokes : 32.0

Tolerance

cm3/1000 strokes : +- 2.0

Check tolerance

cm3/1000S. : +- 4.5 Spreed

Tolerance

cm3/1000 strokes : 3.0

Check tolerance

cm3/1000s. : 6.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 21.10.98 : ISO 4113

Combination No. : 0 401 846 760

Injection pump

Pump designation : PE6P110A320RS3108X EP type number : 0 411 816 730

Governor

Governer design. : RQV250...1100PA920

: -2

Governer no.

: 0 421 813 779

Cust. p. rt No. : 469609-P10 v. 10/96

Customer-spec. information

Customer

: VOLVO-TRUCK

Motor

: TD 102 KF

#### TEST BENCH REQUIREMENTS

Inlet line

: 3.1

Vibration

damper

(RoBo diaphragm) : 4.2

Test oil inlet

temp. °C

Tolerance °C

: <del>+-</del> 2.0

Overflow valve : 2 417 413 096

Inlet press. bar :

2.5

Tolerance bar

: +- 0.1

Tolerance l/h

: +- 20.0

Test nozzle holde

assembly

: 0 681 343 009

Opening pressure

bar

: 173.5

A10

Tolerance bar : +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter :

3.0

x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : ← 1.0

Prestroke mm : 3.05 Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm: 9.50

Tolerance mm : +- 0.50

Firing order

: 1-5-3-6-2-

Phasing

: 0-60-120-180-240

: -300

Tolerance Check

: **←** 0.50

tolerance °NW

: **←** 0.75

Start of delivery mark

Tolerance

: **←** 0.50

Check

tolerance °NW

: **←** 0.75

Barrel no.

: 1

BASIC SETTING

Rated speed rpm :

700

		† Tolerance mm : +- 0.20
Rack travel in mm Tolerance mm	: 12.90 : +- 0.05	Rated speed rpm : 500 guide sleeve
Del. quantity cm3/1000 strokes	: 175.0	travel mm : 4.50 Tolerance mm : +- 0.30
Tolerance cm3/1000 strokes	: + 1.0	Rated speed rpm : 1100  guide sleeve  travel mm : 7.25  Tolerance mm : +- 0.25
Check tolerance cm3/1000s.	: + 4.0	GUIDE SLEEVE POSITION
Spreed		1
Tolerance cm3/1000 strokes	: 4.0	control lever position degree : - 1 Rated speed rpm : 1175
Check tolerance cm3/1000S.	: 7.5 	Rack travel in mm : 16.50 Tolerance mm : +- 1.30
Rated speed rpm	: 250	FULL LOAD DELIVERY AT FULL LOAD STOP
Rack travel in mm Tolerance mm Del. quantity		Rated speed rpm : 700 Aneroid pressure hPa : 1000
cm3/1000 strokes Tolerance		Del. quantity + cm3/1000 strokes : 175.0
cm3/1000 strokes Check tolerance cm3/1000s.	: +- 2.0 : +- 4.5	Tolerance : +- 1.0 Check tolerance
Spreed Tolerance		+ cm3/1000s. : +- 4.0 + Spreed
cm3/1000 strokes Check tolerance cm3/1000s.	: 3.0 : 6.0	+ Tolerance + cm3/1000 strokes : 4.0 + Check tolerance
		cm3/1000s. : 7.5
(B) SETTING OF IN. WITH GOVERNOR	JECTION PUMP	
	·	CONTROL LEVER
GUIDE SLEEVE TRAVE	EL	control lever
Rated speed rpm guide sleeve	: 950	<pre>position degree : 65.0 tolerance degree : +- 4.0</pre>
travel mm Tolerance mm	: 6.50 : + 0.20	control lever position degree : 119.0 tolerance degree : +- 4.0
Rated speed rpm guide sleeve		+ RATED SPEED
travel mm Tolerance mm	: 1.20 : +- 0.10	<pre>+ rack travel mm : 11.90 + Rated speed rpm : 1165 + Tolerance 1/min : +- 5</pre>
Rated speed rpm guide sleeve	: 700	rack travel mm : 4.00
travel mm	: 6.50	Rated speed rpm : 1250

Tolerance 1/min : +- 15 rack travel mm : 0.50 Tolerance mm : ← 0.50 Rated speed rpm : 1350 LOW IDLE control lever position degree : 64.0 tolerance degree : +- 4.0 control lever position degree : 12.0 tolerance degree : +- 4.0 Setting point w/out bumper spring Rated speed rpm : 150 CRT mm min. :> 6.10Testing: Rated speed rpm : 250 rack travel mm : 4.90 Tolerance mm : +0.10Rated speed rpm : 330 TORQUE CONTROL Rated speed rpm : 700 rack travel mm : 12.90 Tolerance mm : +- 0.05 ANEROID/ALTITUDE COMPENSATOR TEST SETTING Rated speed rpm : 500 Pressure hPa : 1000 rack travel mm : 12.90 Tolerance mm : + 0.05 Rated speed rpm : 500 Pressure hPa : - rack travel mm : 9.50 Tolerance mm : +- 0.15 MEASUREMENT

Pressure hPa : 840 rack travel mm : 3.00 Tolerance mm : +- 0.20 Pressure hPa : 240 rack travel mm : 0.25 Tolerance mm : + 0.05 FUEL DELIVERY CHARACTERISTICS Aneroid pressure Rated speed rpm : 700 Del. quantity cm3/1000 strokes : 113.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +- 4.0 STARTING FUEL DELIVERY ESS test: With 24 V solenoid activated, rack must reach start position in max. control lever setting. Rated speed rpm : 100 rack travel mm : 20.50 Tolerance mm :  $\leftarrow 0.50$ Del. quantity cm3/1000 strokes : 185.0 Tolerance cm3/1000 strokes : +- 15.0 Check tolerance cm3/1000s. : +- 19.0 LOW IDLE Rated speed rpm : 250 Rack travel in mm: 4.90 Tolerance mm : +- 0.10 Del. quantity cm3/1000 strokes : 32.0

Tolerance

cm3/1000s.

Spreed

Check tolerance

cm3/1000 strokes : +- 2.0

: +- 4.5

A12

Tolerance : 3.0 Check tolerance cm3/1000s. : 6.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 21.10.98 Test oil : ISO 4113

Combination No. : 0 401 846 827

Injection pump

Pump designation : PE6P120A320RS3178 EP type number : 0 411 826 752

Governor

Governer design. : RQV250...950PA921-3

Governer no. : 0 421 813 786

Cust. part No. :

Customer-spec. information Customer : VOLVO : TD122F Motor Power KW : 257.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C Tolerance °C : <del>+-</del> 2.0

Overflow valve : 2 417 413 096

Inlet press. bar : 1.5

Test nozzle holde

: 1 688 901 019 assembly

Opening pressure

: 208.5 bar Tolerance bar : + 1.5

Test lines : 1 680 750 067

Outside diameter : 6.0

x inside diameter: 1.5 x Length mm : 1000

## **REMARKS**

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant. per values \_\_\_\_\_

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

: 3.65 : +- 0.05 Prestroke mm Tolerance mm Check

tolerance mm : +- 0.10

Rack travel in mm: 10.50 : <del>+-</del> 1.50 Tolerance mm

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance : <del>--</del> 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Barrel no. : 1

#### BASIC SETTING

Del. quantity cm3/1000 strokes : 230.0

Tolerance cm3/1000 strokes : +- 1.0

Check tolerance cm3/1000s. : +- 4.0

Spreed

Tolerance

cm3/1000 strokes : 5.0

	+ Rated speed rpm : 1030
Check tolerance cm3/1000S. : 9.0	Rack travel in mm : 16.50 Tolerance mm : +- 1.30
Rated speed rpm : 250	FULL LOAD DELIVERY AT FULL LOAD STOP
Rack travel in mm: 4.70 Tolerance mm: +- 0.10	Rated speed rpm : 700 Aneroid pressure hPa : 900
Del. quantity cm3/1000 strokes : 20.0 Tolerance	Del. quantity  cm3/1000 strokes : 230.0
cm3/1000 strokes : +- 2.5 Check tolerance	Tolerance + cm3/1000 strokes : +- 1.0
cm3/1000S. : +- 5.5 Spreed	Check tolerance + cm3/1000s. : +- 4.0
Tolerance cm3/1000 strokes : 5.0	+ Spreed + Tolerance
Check tolerance cm3/1000S. : 7.0	cm3/1000 strokes : 5.0 Check tolerance
4->	+ cm3/1000s. : 9.0
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	CONTROL LEVER
GUIDE SLEEVE TRAVEL	control lever
Rated speed rpm : 985 guide sleeve	+ position degree : 120.0 + tolerance degree : + 4.0
travel mm : 8.20 Tolerance mm : +- 0.10	RATED SPEED rack travel mm : 12.00 Rated speed rpm : 985
Rated speed rpm : 250 guide sleeve	Tolerance 1/min : +- 5
travel mm : 1.20 Tolerance mm : + 0.20	+ rack travel mm : 4.00 + Rated speed rpm : 1075 + Tolerance 1/min : +- 15
Rated speed rpm : 450 guide sleeve	rack travel mm : 0.50
travel mm : 3.90 Tolerance mm : +- 0.30	Tolerance mm : + 0.50 Rated speed rpm : 1200
Rated speed rpm : 700 guide sleeve	† †
travel mm : 6.50 Tolerance mm : + 0.20	LOW IDLE
Rated speed rpm : 1060	
guide sleeve travel mm : 9.60	control lever position degree : 64.0
Tolerance mm : + 0.20	tolerance degree : +- 4.0
GUIDE SLEEVE POSITION	Setting point w/out bumper spring
	Rated speed rpm : 100
control lever position degree : - 1	CRT mm min. : > 6.20

## Testing:

Rated speed rpm : 250 rack travel mm : 4.70 Tolerance mm : + 0.10

Rated speed rpm : 315

ANEROID/ALTITUDE COMPENSATOR TEST

#### SETTING

500 Rated speed rpm : 900 Pressure hPa : rack travel mm : 13.05 Tolerance mm : +- 0.05

Rated speed rpm : 500 Pressure hPa rack travel mm : 10.10 Tolerance mm : +- 0.10

## **MEASUREMENT**

Rated speed rpm : 500

Pressure hPa : 600 rack travel mm : 2.60 Tolerance mm : ← 0.10 600

Pressure hPa : 90 rack travel mm : 0.25 Tolerance mm :  $\leftarrow$  0.05

## FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa Rated speed rpm : 700 Del. quantity cm3/1000 strokes : 164.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

: +- 4.0 cm3/1000S.

## STARTING FUEL DELIVERY

Rated speed rpm : 100 rack travel mm : 20.50 Tolerance mm : + 0.50

Del. quantity

cm3/1000 strokes : 290.0

Tolerance

cm3/1000 strokes : +- 20.0

Check tolerance

cm3/1000s. : +- 24.0

## LOW IDLE

Rated speed rpm : 250

Rack travel in mm: 4.70 Tolerance mm : +- 0.10 Del. quantity

cm3/1000 strokes : 20.0 Tolerance

cm3/1000 strokes : +- 2.5 Check tolerance

cm3/1000s. : **←** 5.5

Spreed Tolerance

cm3/1000 strokes : 5.0

Check tolerance cm3/1000s.

7.0

## Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 21.10.98 Edition Test oil : ISO 4113

Combination No. : 0 401 846 991

Injection pump

Pump designation : PE6P110A320RS3108-1

EP type number : 0 411 816 757

Governor

Governer design. : RQV250...1100PA920

: -10

Governer no. : 0 421 814 106

Cust. part No. : 425823 PO2 RELEASED

Customer-spec. information

Customer : VOLVO-TRUCK : THD 102 KB Motor : 212.0

Power KW

## TEST BENCH REQUIREMENTS

Inlet line : 3.1

Vibration damper

(RoBo diaphragm): 4.2

Test oil inlet

40 temp. °C Tolerance °C : **←** 2.0

Overflow valve : 2 417 413 096

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Test nozzle holde

assembly : 0 681 343 009

Opening pressure

bar : 173.5 Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0 x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 3.05 Tolerance mm : + 0.05

Check

tolerance mm : **←** 0.10

Rack travel in mm: 10.50 Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

: -300

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 14.30 Tolerance mm :  $\leftarrow$  0.05

Del. quantity cm3/1000 strokes	: 191.0	Tolerance mm : +- 0.25
Tolerance		Rated speed rpm : 437 guide sleeve
cm3/1000 strokes	: <b>←</b> 1.0 <b>∔</b>	travel mm : 3.71
Check tolerance	<u> </u>	Tolerance mm : +- 0.25
cm3/1000s.	: ← 3.0	Rated speed rpm : 520
	+	guide steeve
Spreed	†	travel mm : 4.67
Talanana	†	Tolerance mm : + 0.25
Tolerance cm3/1000 strokes	: 4.0	Rated speed rpm : 1370 guide sleeve
Check tolerance	1	travel mm : 11.50
cm3/1000s.	: 7.5	Tolerance mm : + 0.50
11107 10000 ·	1	1000101100 11111
	+	
	<del>}</del>	GUIDE SLEEVE POSITION
Rated speed rpm	: 250	
	+	
Rack travel in mm		control lever
Tolerance mm	: <del>←</del> 0.10 +	position degree : - 1
Del. quantity		Rated speed rpm : 1175
cm3/1000 strokes	: 32.0 +	
Tolerance	<u> </u>	Rack travel in mm : 16.50
cm3/1000 strokes		Tolerance mm : +- 1.30
Check tolerance		
cm3/1000s.	: +- 4.3	FULL LOAD DELIVERY AT FULL LOAD STOP
Spreed Tolerance	Ť	FULL LUAD DELIVERY AT FULL LUAD STOP
cm3/1000 strokes	: 3.0	Rated speed rpm : 700
Check tolerance	· 3.0	Rated speed rpm : 700 Aneroid pressure
cm3/1000s.	: 6.0 I	hPa : 1200
ChD/ 10005.	. 0.0	Del. quantity
	1	cm3/1000 strokes : 191.0
(B) SETTING OF IN	JECTION PUMP	Tolerance
WITH GOVERNOR	+	cm3/1000 strokes : +- 1.0
	+	Check tolerance
	<del></del>	$cm3/1000s.$ : $\leftarrow$ 3.0
GUIDE SLEEVE TRAV	EL +	Spreed
	+	Tolerance
Rated speed rpm	: 1146 +	cm3/1000 strokes : 4.0
guide sleeve	. 7.81	Check tolerance cm3/1000s. : 7.5
travel mm Tolerance mm	: 7.81 : + 0.25	cm3/1000s. : 7.5
roterance mm	1	
Rated speed rpm	: 250	
guide sleeve	. 20	CONTROL LEVER
travel mm	: 1.19	STATE CONTRACTOR OF THE STATE O
Tolerance mm	: + 0.25	control lever
	+	position degree : 63.0
Rated speed rpm	: 1081	tolerance degree : +- 4.0
guide sleeve	+	
travel mm	: 6.83 +	control lever
Tolerance mm	: <b>←</b> 0.25 <b>+</b>	position degree : 120.0
	+	tolerance degree : +- 4.0
Rated speed rpm	: 387 +	2455
guide sleeve	+	RATED SPEED
travel mm	: 2.96 +	rack travel mm : 13.30

: 1135 : ← 5
: 4.00 : 1240 : <del>+-</del> 15
: 0.50 : ← 0.50 : 1350
: 66.0 : + 4.0
: 11.0 : + 4.0
ut bumper spring
: 150
: > 6.70
: 250 : 5.70 : ← 0.10
: 330
: 700 : 14.30 : +- 0.05
······································
: 500 : 1200 : 14.30 : + 0.05

MEASUREMENT		
Rated speed rpm	: 500	
Pressure hPa rack travel mm Tolerance mm	: 960 : 3.80 : + 0.15	
Pressure hPa rack travel mm Tolerance mm	: 240 : 0.25 : +- 0.05	
FUEL DELIVERY CHA	RACTERISTICS	·
Aneroid pressure		•
hPa Rated speed rpm	700	
Del. quantity cm3/1000 strokes	: 113.0	
Tolerance cm3/1000 strokes		
Check tolerance		
cm3/1000S.	: +- 4.0	
cm3/1000S.	: +- 4.0	
LOW IDLE	: +- 4.0	
LOW IDLE		
LOW IDLE Rated speed rpm Rack travel in mm Tolerance mm	: 250	
LOW IDLE  Rated speed rpm  Rack travel in mm  Tolerance mm  Del. quantity  cm3/1000 strokes	: 250 : 5.70	
LOW IDLE  Rated speed rpm  Rack travel in mm  Tolerance mm  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes	: 250 : 5.70 : + 0.10	
LOW IDLE  Rated speed rpm  Rack travel in mm  Tolerance mm  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000s.  Spreed	: 250 : 5.70 : ← 0.10 : 32.0	
LOW IDLE  Rated speed rpm  Rack travel in mm  Tolerance mm  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000S.  Spreed  Tolerance  cm3/1000 strokes	: 250 : 5.70 : + 0.10 : 32.0 : + 2.0	
LOW IDLE  Rated speed rpm  Rack travel in mm  Tolerance mm  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000S.  Spreed  Tolerance	: 250 : 5.70 : + 0.10 : 32.0 : + 2.0 : + 4.5	

#### Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 15.10.98 Test oil : ISO 4113

Combination No. : 0 402 086 705

Injection pump

Pump designation : PES6P100B321RS3388 EP type number : 0 412 006 714

Governor

Governer design. : RSV400...1125P0A698

Governer no. : 0 421 833 624

Cust. part No. : 51.11103-7606

Customer-spec. information

Customer : MAN

Motor : 00826 LE527 Power KW : 169.0

## TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

temp. °C : 40Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0 Tolerance bar : + 0.1

Overflow quantity

min. L/h : 150 Tolerance L/h : +- 20.0

Test nozzle holde

assembly : 1 688 901 101

Opening pressure

bar : 208.5 Tolerance bar : + 1.5 Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 3.30
Tolerance mm : + 0.05
Check

Lneck

tolerance mm : +- 0.10

Rack travel in mm : 13.50 Tolerance mm : + 0.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : + 0.75

Start of delivery blocking

Tolerance :  $\leftarrow$  0.10

Check

tolerance °NW : +- 0.75

Barret no. : 1

BASIC SETTING

Rated speed rpm : 925

\_\_\_\_\_

	+
Rack travel in mm : 13.80 Tolerance mm : +- 0.05	FULL LOAD DELIVERY AT FULL LOAD STOP
Del. quantity cm3/1000 strokes : 166.0	Rated speed rpm : 925 Aneroid pressure
Tolerance cm3/1000 strokes : +- 1.0	+ hPa : 1500 + Del. quantity + cm3/1000 strokes : 166.0
Check tolerance cm3/1000s. : +- 4.0	+ Tolerance + cm3/1000 strokes : + 1.0 + Check tolerance
Spreed	+ cm3/1000s. : +- 4.0 + Spreed
Tolerance cm3/1000 strokes : 4.0	Tolerance cm3/1000 strokes : 4.0 Check tolerance cm3/1000S. : 6.0
Check tolerance cm3/1000s. : 6.0	
	CONTROL LEVER
Rated speed rpm : 400  Rack travel in mm : 4.80	control lever position degree : 101.0 tolerance degree : +- 4.0
Tolerance mm : +- 0.10  Del. quantity  cm3/1000 strokes : 25.0	RATED SPEED : 12.10
Tolerance cm3/1000 strokes : + 3.0 Check tolerance	Rated speed rpm : 1175 Tolerance 1/min : + 5
cm3/1000s. : +- 6.0 Spreed Tolerance	rack travel mm : 4.00 Rated speed rpm : 1260 Tolerance 1/min : + 15
cm3/1000 strokes : 3.5 Check tolerance cm3/1000s. : 5.5	rack travel mm : 0.85 Tolerance mm : + 0.55 Rated speed rpm : 1400
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	rack travel mm : 4.00 Rated speed rpm : 1265 Tolerance 1/min : + 15
GUIDE SLEEVE POSITION	+
control lever position degree : - 3	LOW IDLE
Rated speed rpm : 800  Rack travel in mm : 0.50	control lever position degree : 77.0 tolerance degree : +- 4.0
Tolerance mm : + 0.20	Setting point w/out bumper spring
governor spring pre-tension click setting x : 5.00	Rated speed rpm : 400 rack travel mm : 4.30 Tolerance mm : + 0.10
	т

# Testing:

Rated speed rpm	:	400
rack travel mm	:	4.80
Tolerance mm	: +-	0.10

rack travel mm	:	2.00
Rated speed rpm	:	<b>50</b> 0
Tolerance 1/min	; ⊣	<del></del> 30

TORQUE CONTROL		
Rated speed rpm	:	925
rack travel mm	:	13.80
Tolerance mm	; +	- 0.05

Rated speed rpm	:	1125
rack travel mm	:	13.10
Tolerance mm	: -	<b>-</b> 0.10

Rated speed rpm	:		700
rack travel mm	:		13.80
Tolerance mm	: •	+-	0.10

Rated speed rpm	:	1000
rack travel mm	:	13.70
Tolerance mm	: -	<b>-</b> 0.10

# ANEROID/ALTITUDE COMPENSATOR TEST

## SETTING

Rated speed rpm	:	500
Pressure hPa	:	1500
rack travel mm	:	13.80
Tolerance mm	; ⊣	<b>⊢</b> 0.10

Rated speed rpm	:	500
Pressure hPa	:	-
rack travel mm	:	9.70
Tolerance mm	: +	- 0.20

## **MEASUREMENT**

Rated	speed	rom	:	500
	JPCCG	. P	•	200

Pressure hPa	:	150
rack travel mm	:	10.00
Tolerance mm	: +	- 0.05

Pressure hPa	:		800
rack travel mm	:		13.20
Tolerance mm	:	+-	0.15

# FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa Rated speed rpm Del. quantity	:		1500 1125
cm3/1000 strokes	:		146.5
cm3/1000 strokes Check tolerance	;	+-	3.0
cm3/1000s.	:	+-	6.0

Aneroid pressure hPa Rated speed rpm	: 1500 : 700
rack travel mm	: 13.80
Tolerance mm	: +- 0.10
Del. quantity cm3/1000 strokes Tolerance	: 179.0
cm3/1000 strokes Check tolerance	: <b>←</b> 3.0
cm3/1000s.	: +- 6.0

Aneroid pressure			
hPa	:		-
Rated speed rpm	:		500
Del. quantity			
cm3/1000 strokes	:		93.0
Tolerance			
cm3/1000 strokes	:	+-	1.0
Check tolerance			
cm3/1000s.	:	+-	4.0

# STARTING FUEL DELIVERY

	100
	9.50
+-	0.20
	112.0
+-	10.0
+-	14.0

# LOW IDLE

Rated speed r	mar	:	400
Rack travel i Tolerance mm			4.80 0.10

Del. quantity cm3/1000 strokes	:	25.0
Tolerance cm3/1000 strokes	: +-	3.0
Check tolerance cm3/1000S.	: +-	6.0
Spreed Tolerance		
cm3/1000 strokes Check tolerance	:	3.5
cm3/1000s.	:	5.5

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 16,10,98 Edition Test oil : ISO 4113

Combination No. : 0 402 646 672

Injection pump

Pump designation : PE6P120A320RS7421 EP type number : 0 412 626 956

Governor

Governer design. : RQV275...1150PA1298K

Governer no. : 0 421 815 525

Cust. part No. : 1316185/1

Customer-spec. information

Customer : DAF : PF 183 M Motor Power KW : 183.0

## TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

temp. °C : 40 Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 1 417 413 000

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Overflow quantity min. L/h : 150 Tolerance L/h : + 20.0

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

: 208.5 bar Tolerance bar : +- 1.5 Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter :

x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 15.0 Tolerance bar : +- 1.0

Prestroke mm : 4.85 Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm: 10.50

Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance °NW : **←** 0.75

Start of delivery mark

Tolerance : +- 0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 1

#### BASIC SETTING

Rated speed rpm : 850

Rack travel in mm : 11.35 Tolerance mm : +- 0.05

	+ quide sleeve
Rai manaika	
Del. quantity cm3/1000 strokes : 206.0	+ travel mm : 3.85 + Tolerance mm : +- 0.25
- 1	4400
Tolerance	+ Rated speed rpm : 1480
cm3/1000 strokes : +- 1.0	+ guide sleeve
	+ travel mm : 13.50
Check tolerance : ← 4.0	+ Tolerance mm : +- 0.50
Spreed	GUIDE SLEEVE POSITION
Tolerance	1
cm3/1000 strokes : 5.0	control lever
CIID/ 1000 SCIOKES . J.U	
Charle Antonio	position degree : -1
Check tolerance	+ Rated speed rpm : 1343
cm3/1000s. : 9.0	†
	+ Rack travel in mm : 9.80
	+ Tolerance mm : + 2.70
	<del> </del>
Rated speed rpm : 275	
Marca opeca i piii	FULL LOAD DELIVERY AT FULL LOAD STOP
Rack travel in mm: 4.90	The compression of the compressi
Tolerance mm : + 0.10	Rated speed rpm : 850
Del. quantity	+ Aneroid pressure
cm3/1000 strokes : 16.0	+ hPa : 1500
Tolerance	+ Del. quantity
cm3/1000 strokes : +- 3.0	+ cm3/1000 strokes : 206.0
Check tolerance	+ Tolerance
cm $3/1000$ s. : $\leftarrow$ 6.0	+ cm3/1000 strokes : +- 1.0
Spreed	+ Check tolerance
Tolerance	+ cm3/1000s. : +- 4.0
	+ Spreed
Check tolerance	+ Tolerance
cm3/1000s. : 12.0	+ cm3/1000 strokes : 5.0
	+ Check tolerance
	+ cm3/1000s. : 9.0
(B) SETTING OF INJECTION PUMP	+
WITH GOVERNOR	1
	<u> </u>
	CONTROL LEVER
GUIDE SLEEVE TRAVEL	I CONTINUE ELVEN
POTAE SPEEAE INVAEF	t control lever
Dahad 4200	
Rated speed rpm : 1200	position degree : 118.0
guide sleeve	+ tolerance degree : +- 4.0
travel mm : 10.06	†
Tolerance mm : +- 0.15	+ RATED SPEED
	+ rack travel mm : 10.05
Rated speed rpm : 275	Rated speed rpm : 1190
guide sleeve	+ Tolerance 1/min : + 5
travel mm : 1.71	+ Check
Tolerance mm : +- 0.20	+ speed 1/min : +- 10
racer arise into	1 30000 17111111
Dated around from . 911	rack travel mm : 4.00
Rated speed rpm : 811	
guide sleeve	+ Rated speed rpm : 1285
travel mm : 6.79	+ Tolerance 1/min : +- 15
Tolerance mm : +- 0.25	+ Check
	+ speed 1/min : +- 20
Rated speed rpm : 450	+
•	+ rack travel mm : 0.70
	1 - married ma

Tolerance mm Rated speed rpm	: +- 0.70 : 1450
LOW IDLE	
control lever position degree tolerance degree	: 72.0 : ← 4.0
Setting point w/o	out bumper spring
Rated speed rpm	: 175
CRT mm min.	: > 7.00
Testing:	
Rated speed rpm rack travel mm Tolerance mm	: 4.90 : ← 0.10
Rated speed rpm	: 325
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	: 850 : 11.35 : ← 0.05
Rated speed rpm rack travel mm Tolerance mm	
Rated speed rpm rack travel mm Tolerance mm	: 1000 : 11.15 : +- 0.10
Rated speed rpm rack travel mm Tolerance mm	: 800 : 11.15 : +- 0.10
Rated speed rpm rack travel mm Tolerance mm	: 650 : 10.45 : +- 0.10
Rated speed rpm rack travel mm Tolerance mm	: 500 : 9.55 : ← 0.10
Rated speed rpm rack travel mm Tolerance mm	: 1150 : 11.05 : ← 0.10

# ANEROID/ALTITUDE COMPENSATOR TEST

## SETTING

Rated speed rpm	:	875
Pressure hPa	:	1500
rack travel mm	:	11.35
Tolerance mm	:	+- 0.10

Rated speed rpm	:	875
Pressure hPa	:	-
rack travel mm	:	8.10
Tolerance mm	: +	0.10

## MEASUREMENT

Rated speed rpm	:	875
Pressure hPa	:	400
rack travel mm	:	10.50
Tolerance mm	: +	- 0.05
Pressure hPa	•	200

Pressure hPa	:	200
rack travel mm	:	9.00
Tolerance mm	: +	- 0.10

## FUEL DELIVERY CHARACTERISTICS

<del></del>	
Aneroid pressure hPa Rated speed rpm Del. quantity	: 1500 : 1130
cm3/1000 strokes	: 184.0
Tolerance cm3/1000 strokes	: +- 2.0
Check tolerance cm3/1000s. Spreed	: +- 5.0
Tolerance cm3/1000 strokes	: 8.0
Check tolerance cm3/1000s.	: 12.0
rack travel mm Tolerance mm	: 11.15 : + 0.10
Aneroid pressure	: -
Rated speed rpm Del. quantity	: 600
cm3/1000 strokes	: 138.0

cm3/1000 strokes	: +-	1.0
Check tolerance cm3/1000s.	: +-	4.0
Spreed Tolerance		0.0
cm3/1000 strokes Check tolerance	:	8.0
cm3/1000s.	:	12.0

# LOW IDLE

Rated speed rpm	:		275	
Rack travel in mm	:		4.90	
Tolerance mm	:	+-	0.10	
Del. quantity				
cm3/1000 strokes	:		16.0	
Tolerance				
cm3/1000 strokes	:	+	3.0	
Check tolerance				
cm3/1000S.	:	+-	6.0	
Spreed				
Tolerance				
cm3/1000 strokes	:		8.0	
Check tolerance				
cm3/1000s.	:		12.0	
			_	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 15.10.98 Edition : ISO 4113 Test oil

Combination No. : 0 402 946 031

Injection pump

Pump designation : PES6P120A320RS8050 EP type number : 0 412 926 032

Governor

Governer design. : RQ250/1000PA1342 Governer no. : 0 421 801 822

Cust. part No. : 1388694

Customer-spec. information Customer : SCANIA Motor : DSI 9E01 Power KW : 170.0

## TEST BENCH REQUIREMENTS

Inlet line : EHAB

Test oil inlet

temp. °C : 40 Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 2 417 413 095

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Overflow quantity

min. l/h : 80 Tolerance l/h : +- 10.0

Test nozzle holde

: 1 688 901 104 assembly

Opening pressure

bar : 251.5 Tolerance bar : ← 1.5

Test lines : 1 680 750 008

Outside diameter: 6.0

x inside diameter :

x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 5.00 Tolerance mm : + 0.05 Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50 Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300 Tolerance : +- 0.50

Check

tolerance  $^{\circ}NW$  : +- 0.75

Start of delivery mark

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 700

		1
Rack travel in m	n: 12.50	Rated speed rpm : 410
Tolerance mm	: ← 0.05	🕂 guide sleeve
		† travel mm : 3.50
Del. quantity		† Tolerance mm : +- Ü.10
cm3/1000 strokes	: 244.0	+
		Rated speed rpm : 530
Tolerance	. 4.0	+ guide sleeve
cm3/1000 strokes	: <del>-</del> 1.0	+ travel mm : 4.50
Charle Aslamana		Tolerance mm : + 0.10
Check tolerance cm3/1000s.	: <del></del> 7.0	Rated speed rpm : 1670
Chiar Tudua.	7.0	guide sleeve
Spreed		+ travel mm : 11.50
op. ccu		+ Tolerance mm : +- 0.50
Tolerance		+
cm3/1000 strokes	: 8.0	
		+ GUIDE SLEEVE POSITION
Check tolerance		<del>†</del>
cm3/1000s.	: 12.0	<u> </u>
		+ control lever
		position degree : 108
Datad aroad arm	: 300	+ Rated speed rpm : 600
Rated speed rpm	: 300	Rack travel in mm : 16.00
Rack travel in mm	5 40	Tolerance mm : + 0.60
Tolerance mm	: +- 0.10	
Del. quantity	0.10	
cm3/1000 strokes	: 38.0	FULL LOAD DELIVERY AT FULL LOAD STOP
Tolerance	. 55.5	TODE CONTROLLED TO THE TODE CONTROLLED TO
cm3/1000 strokes	: +- 3.0	Rated speed rpm : 700
Check tolerance		+ Aneroid pressure
cm3/1000s.	: <del>←</del> 6.0	+ hPa : 1500
Spreed		1 Del. quantity
Tolerance		+ cm3/1000 strokes : 244.0
cm3/1000 strokes	: 5.0	† Tolerance
Check tolerance		+ cm3/1000 strokes : + 1.0
cm3/1000S.	: 8.0	+ Check tolerance
		+ cm3/1000s. : $+$ 7.0
		+ Spreed
(B) SETTING OF IN	NECTION PUMP	+ Tolerance
WITH GOVERNOR		+ cm3/1000 strokes : 8.0
		+ Check tolerance
CHINE CLEENE TOAN		+ cm3/1000s. : 12.0
GUIDE SLEEVE TRAV	EL	Ī
Rated speed rpm	: 1061	
guide sleeve	. 1001	CONTROL LEVER
travel mm	: 4.72	1 CONTINUE LEVEN
Tolerance mm	: +- 0.15	control lever
70 CC. 41 100 11111	. 51.15	position degree : 43.0
Rated speed rpm	: 285	+ tolerance degree : +- 4.0
guide sleeve		+
travel mm	: 2.17	+ control lever
Tolerance mm	: +- 0.20	position degree : 105.0
		tolerance degree : +- 4.0
Rated speed rpm	: 1000	†
guide sleeve	. 50	+ RATED SPEED
travel mm	: 4.50	+ rack travel mm : 11.50
Tolerance mm	: +- 0.10	+ Rated speed rpm : 1060

control lever	: +- 20 : 0.50 : +- 0.50 : 1350 : 85.0 : +- 4.0
Rated speed rpm Tolerance 1/min Check speed 1/min rack travel mm Tolerance mm Rated speed rpm  LOW IDLE  control lever position degree tolerance degree control lever	: 1247 : + 15 : + 20 : 0.50 : + 0.50 : 1350 : 85.0 : + 4.0
Check speed 1/min rack travel mm Tolerance mm Rated speed rpm  LOW IDLE  control lever position degree tolerance degree control lever	: +- 15 : +- 20 : 0.50 : +- 0.50 : 1350 : 85.0 : +- 4.0
speed 1/min  rack travel mm  Tolerance mm  Rated speed rpm  LOW IDLE  control lever position degree tolerance degree control lever	: 0.50 : +- 0.50 : 1350 : 85.0 : +- 4.0
Tolerance mm Rated speed rpm  LOW IDLE  control lever position degree tolerance degree control lever	: +- 0.50 : 1350 : 85.0 : +- 4.0
control lever position degree tolerance degree control lever	
position degree tolerance degree control lever	
control lever	
	. 21 0
position degree tolerance degree	: +- 4.0
Setting point w/ou	ut bumper spring
Rated speed rpm	: 150
CRT mm min.	: > 8.00
Testing:	
Rated speed rpm	
rack travel mm Tolerance mm	: 5.60 : +- 0.10
rack travel mm	: < 2.00
Rated speed rpm Tolerance 1/min	: 390 : +- 20
TORQUE CONTROL	700
Rated speed rpm rack travel mm	: 700 : 12.50
Tolerance mm	: +- 0.05
Rated speed rpm rack travel mm	: 1000 : 12.50
Tolerance mm	: + 0.10

Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 500 : 1500 : 12.30 : +- 0.05
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 500 : - : 10.40 : +- 0.20
MEASUREMENT	
Rated speed rpm	: 500
Pressure hPa rack travel mm Tolerance mm	: 275 : 10.90 : +- 0.15
Pressure hPa rack travel mm Tolerance mm	: 425 : 12.10 : +- 0.05
Start interlock	· · · · · · · · · · · · · · · · · · ·
Rated speed rpm Rated speed rpm	: > 100 : < 170
Check speed 1/min Check	: > 80
speed 1/min	: < 190
FUEL DELIVERY CHA	RACTERISTICS
Aneroid pressure hPa Rated speed rpm Del. quantity	: 1500 : 1000
cm3/1000 strokes	: 217.0
Tolerance cm3/1000 strokes Check tolerance	: +- 4.0
cm3/1000s.	: +- 6.0
Aneroid pressure	
hPa	: -

Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 210.0

cm3/1000 strokes : +- 1.0

Tolerance

Check tolerance cm3/1000s.

500

: +- 4.0

# STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + 0.50
Del. quantity
cm3/1000 strokes : 250.0
Tolerance
cm3/1000 strokes : + 20.0

Check tolerance cm3/1000s. : +- 25.0

## LOW IDLE

300 Rated speed rpm : Rack travel in mm : 5.60 Tolerance mm :  $\leftarrow$  0.10 Del. quantity cm3/1000 strokes : 38.0 Tolerance cm3/1000 strokes :  $\leftarrow$  3.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000S. 8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 21.01.97 : ISO 4113

Combination No. : 0 400 866 208AA

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governer design. : RSV400...1100A0C2190

: -80R

Governer no. : 0 420 233 319

Cust. part No. : 3921143

Customer-spec. information Customer : CDC

Motor

: 6 CT/173Ps/2200

#### TEST BENCH REQUIREMENTS

Inlet line : 2.

Test oil inlet

temp. °C

temp.  $^{\circ}C$  :  $^{\circ}C$ 

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Test nozzle holde

assembly

: 1 688 901 101

Opening pressure

bar : 208.5 Tolerance bar : +- 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 28.0 Tolerance bar : +- 1.0

Firing order : 1-5-3-6-2-

: 4

Phasing

: 0-60-120-180-240

: -300

Tolerance Check

: +- 0.50

tolerance °NW

: +- 0.75

Start of delivery mark

°NW after s.o.d. : 10.00

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 10.60

Tolerance mm : + 0.05

Del. quantity cm3/1000 strokes : 124.5

Tolerance

cm3/1000 strokes : + 1.0

Check tolerance

cm3/1000s.

: <del>←</del> 3.5

Spreed

Tolerance

cm3/1000 strokes : 4.0

**BO4** 

Check tolerance cm3/1000s. : 6.5	- CONTROL LEVER
	control lever
+	position degree : 99.0
Rated speed rpm : 400	tolerance degree : +- 4.0
Rack travel in mm: 5.60	- RATED SPEED
Tolerance mm : + 0.10	- rack travel mm : 9.65
Del. quantity + cm3/1000 strokes : 18.0 +	- Rated speed rpm : 1145 - Tolerance 1/min : +- 5
Tolerance	- Toterance Thirth . The 3
cm3/1000 strokes : +- 2.0	rack travel mm : 4.00
Check tolerance + 4.5 +	- Rated speed rpm : 1200 - Tolerance 1/min : +- 15
Spreed + 4.3	- Toterance Trimin . T- 13
Tolerance	rack travel mm : 0.85
cm3/1000 strokes : 6.0 + Check tolerance	- Tolerance mm : +- 0.55 - Rated speed rpm : 1355
cm3/1000s. : 8.0	- Kated Speed (piii . 1333 -
+	rack travel mm : 4.00
(B) SETTING OF INJECTION PUMP	- Rated speed rpm : 1205 - Tolerance 1/min : +- 15
WITH GOVERNOR	- Toterance Minth . +- 15
+	•
GUIDE SLEEVE POSITION	- LOW IDLE
1	
{	
control lever	- - control lever
control lever position degree : FREE	- - control lever - position degree : 78.0
position degree : FREE	position degree : 78.0
position degree : FREE Rated speed rpm : 800	position degree : 78.0 tolerance degree : + 4.0 Setting point w/out bumper spring
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring Rated speed rpm : 400
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50	position degree : 78.0 tolerance degree : + 4.0 Setting point w/out bumper spring
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring pre-tension	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring Rated speed rpm : 400 rack travel mm : 5.10
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring pre-tension	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100 Aneroid pressure hPa : - Del. quantity	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 490
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100 Aneroid pressure hPa : - Del. quantity cm3/1000 strokes : 124.5	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100 Aneroid pressure hPa : - Del. quantity	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing:  Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 490 Tolerance 1/min : + 30
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : +- 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100 Aneroid pressure hPa : - Del. quantity cm3/1000 strokes : 124.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 490 Tolerance 1/min : + 30
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100 Aneroid pressure hPa : - Del. quantity cm3/1000 strokes : 124.5 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 3.5	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 490 Tolerance 1/min : + 30  TORQUE CONTROL Rated speed rpm : 1100
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100 Aneroid pressure hPa : - Del. quantity cm3/1000 strokes : 124.5 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 3.5 Spreed Tolerance	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 490 Tolerance 1/min : + 30
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100 Aneroid pressure hPa : - Del. quantity cm3/1000 strokes : 124.5 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 3.5 Spreed Tolerance cm3/1000 strokes : 4.0	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 490 Tolerance 1/min : + 30  TORQUE CONTROL Rated speed rpm : 1100 rack travel mm : 10.60
position degree : FREE Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20  governor spring pre-tension click setting x : 3.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1100 Aneroid pressure hPa : - Del. quantity cm3/1000 strokes : 124.5 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 3.5 Spreed Tolerance	position degree : 78.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 5.10 Tolerance mm : + 0.10  Testing: Rated speed rpm : 400 rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 5.60 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 490 Tolerance 1/min : + 30  TORQUE CONTROL Rated speed rpm : 1100 rack travel mm : 10.60

## STARTING FUEL DELIVERY

Rated speed rpm : 100 rack travel mm : 20.00 Tolerance mm : + 1.00 Del. quantity

cm3/1000 strokes : 147.5

Tolerance

cm3/1000 strokes :  $\leftarrow$  10.0

Check tolerance

cm3/1000s. : +- 13.0

## LOW IDLE

Rated speed rpm : 400 5.60 Rack travel in mm : Tolerance mm : **←** 0.10 Del. quantity cm3/1000 strokes : 18.0 Tolerance cm3/1000 strokes : +-2.0 Check tolerance cm3/1000s. 4.5 Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance cm3/1000s. 8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 23.10.98 Test oil : 23.10.98

Combination No. : 0 400 876 425

Injection pump

Pump designation : PES6A95D410RS2864 EP type number : 0 410 896 888

Governor

Governer design. : RSV400...1050A2C2263

: <del>-</del>7L

Governer no. : 0 420 232 606

Cust. part No. : 87 801 601

Customer-spec. information Customer : NH

Motor

: 7.5 L : 149.0

Power KW

## TEST BENCH REQUIREMENTS

Inlet line : 1.3

Test oil inlet

temp. °C

Tolerance °C

: <del>+-</del> 2.0

Overflow valve : 1 419 992 198

Inlet press. bar : 1.5

Test nozzle holde

assembly

: 1 688 901 101

Opening pressure

bar

: 208.5

Tolerance bar : + 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0

**B**07

x inside diameter : 2.0 600 x length mm :

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm

: 2.60

Tolerance mm

: **←** 0.05

Check

tolerance mm : + 0.10

Rack travel in mm : 10.50

Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

Phasing

: 0-60-120-180-240

: -300 : +- 0.50

Tolerance Check

tolerance °NW : +- 0.75

BASIC SETTING

Rated speed rpm :

800

Rack travel in mm : 14.10

Tolerance mm :  $\leftarrow$  0.10

Del. quantity

cm3/1000 strokes : 151.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

cm3/1000s.

: +- 3.0

Spreed

Tolerance cm3/1000 strokes : 3.5	+ Check tolerance cm3/1000s. : 8.0
Check tolerance cm3/1000S. : 8.0	
	+ CONTROL LEVER
Rated speed rpm : 650	<ul> <li>control lever</li> <li>position degree : 92.0</li> <li>tolerance degree : +- 4.0</li> </ul>
Rack travel in mm: 4.50 Tolerance mm: + 0.10	+
Del. quantity cm3/1000 strokes : 20.0	ASSEMBLY GOVERNOR SETTING
Tolerance cm3/1000 strokes : +- 2.0 Check tolerance	+ Rated speed rpm : 1078 + rack travel mm : 11.70
cm3/1000s. : +- 4.5 Spreed	Rated speed rpm : 1105 Tolerance 1/min : +- 5
Tolerance cm3/1000 strokes : 5.5	rack travel mm : 4.00
Check tolerance cm3/1000s. : 9.0	rack travel mm : 0.85 Tolerance mm : + 0.55 Rated speed rpm : 1250
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	Rated speed rpm : 1079
Marin Governion	+ rack travel mm : 11.70
GUIDE SLEEVE POSITION	+ Rated speed rpm : 1106 + Tolerance 1/min : + 5 + rack travel mm : 4.00
control lever position degree : - 3 Rated speed rpm : 800	rack travel mm : 0.85 Tolerance mm : +- 0.55 Rated speed rpm : 1250
Rack travel in mm : 0.50 Tolerance mm : +- 0.20	Rated speed rpm : 1080 rack travel mm : 11.70
<pre>governor spring pre-tension click setting x : 2.50</pre>	+ Rated speed rpm : 1107 + Tolerance 1/min : +- 5 + rack travel mm : 4.00
FULL LOAD DELIVERY AT FULL LOAD STOP	+ rack travel mm : 0.85
Rated speed rpm : 800	Tolerance mm : +- 0.55 Rated speed rpm : 1250
Aneroid pressure hPa : 1200	Rated speed rpm : 1081
Del. quantity cm3/1000 strokes : 151.0 Tolerance	Rated speed rpm : 1081 rack travel mm : 11.70
cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 3.0	Rated speed rpm : 1108 Tolerance 1/min : + 5 rack travel mm : 4.00
Spreed Tolerance	+ rack travel mm : 0.85
cm3/1000 strokes : 3.5	Tolerance mm : + 0.55 + Rated speed rpm : 1250

		+ rack travel mm : 11.90 + Tolerance mm : +- 0.05
Rated speed rpm rack travel mm	: 1082 : 11.70	<del> </del>
Rated speed rpm		Rated speed rpm : 1030 rack travel mm : 12.70 Tolerance mm : +- 0.10
Tolerance 1/min rack travel mm	: + 5	+ Rated speed rpm : 950
		rack travel mm : 13.35 Tolerance mm : +- 0.10
rack travel mm Tolerance mm Rated speed rpm	: +- 0.55 : 1250	
		ANEROID/ALTITUDE COMPENSATOR TEST
Rated speed rpm rack travel mm		‡
		SETTING
Rated speed rpm Tolerance 1/min rack travel mm	: +- 5 · 4 nn	Rated speed rpm : 500 Pressure hPa : 1200
rack travel mm		rack travel mm : 14.15 Tolerance mm : +- 0.10
Tolerance mm Rated speed rpm	: +- 0.55	+
Rated Speed /piii	. 1230	Rated speed rpm : 500 Pressure hPa : - rack travel mm : 7.80
LOW IDLE		+ rack travel mm : 7.80 - Tolerance mm : +- 0.05
andral lavas		MEASUREMENT
control lever position degree tolerance degree	: 74.0 : +- 4.0	Rated speed rpm : 500
Setting point w/o	ut bumper spring	+ Pressure hPa : 775 + rack travel mm : 13.50 + Tolerance mm : + 0.05
Rated speed rpm rack travel mm		+
Tolerance mm		+ Pressure hPa : 520 + rack travel mm : 11.10
Testing:		+ Tolerance mm : +- 0.20
Rated speed rpm rack travel mm		FUEL DELIVERY CHARACTERISTICS
Tolerance mm		
rack travel mm Rated speed rpm	: 2.00 · 740	Aneroid pressure hPa : -
Tolerance 1/min	: +- 30	Rated speed rpm : 500 Del. quantity
TORQUE CONTROL		+ cm3/1000 strokes : 70.5 Tolerance
Rated speed rpm	: 800 : 14.10	cm3/1000 strokes : +- 1.0 Check tolerance
rack travel mm Tolerance mm	: +- 0.10	cm3/1000s. : +- 3.0
Rated speed rpm rack travel mm	: 500	<u> </u>
Tolerance mm		STARTING FUEL DELIVERY
Rated speed rpm	: 1030	Rated speed rpm : 100

rack travel mm : 20.00
Tolerance mm : + 0.20
Del. quantity
cm3/1000 strokes : 160.0
Tolerance
cm3/1000 strokes : + 8.0
Check tolerance
cm3/1000s. : + 11.0

# LOW IDLE

Rated speed rpm : 650 Rack travel in mm: 4.50 Tolerance mm : +- 0.10 Del. quantity cm3/1000 strokes : 20.0 Tolerance cm3/1000 strokes : +- 2.0 Check tolerance : +- 4.5 cm3/1000s. Spreed Tolerance cm3/1000 strokes : 5.5 Check tolerance cm3/1000s. : 9.0

## Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 26.10.98 Edition : ISO 4113 Test oil

Combination No. : F 002 A0Z 120

Injection pump

Pump designation : PES3A90D410RS2955 EP type number : F 002 A10 041

Governor

Governer design. : RSV300...1000A2B2281

: 9 420 034 610 Governer no.

Cust. part No. : Escorts Tractors

Customer-spec. information : F3<del>-</del>315 Motor Power KW : 37.2

## TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C 40 Tolerance °C : +- 2.0

Overflow valve : 9 451 037 430

Inlet press. bar : 1.5

Test nozzle holde

: 0 681 343 009 assembly

Opening pressure

: 173.5 Tolerance bar

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0 x length mm 600

# REMARKS

(A) INJECTION PUMP SETTING VALUES Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Tolerance bar : + 26.0

Prestroke mm : **←** 0.05 Tolerance mm Check : **←** 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  1.50

Firing order : 1-2-3-

: 0-120-240 Phasing Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

# BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 10.20 Tolerance mm : +- 0.05

Del. quantity

cm3/1000 strokes : 60.0

Tolerance

cm3/1000 strokes : +- 0.5

Check tolerance cm3/1000s. : +- 2.5

Spreed

Tolerance

cm3/1000 strokes : 2.5

	tolerance degree : +- 4.0
Check tolerance : 4.0 -	RATED SPEED rack travel mm : 9.50 Rated speed rpm : 1090 Tolerance 1/min : +- 5
Rated speed rpm : 300 - Tolerance mm : + 0.10 - Del. quantity - cm3/1000 strokes : 15.0 -	rack travel mm : 0.85 Tolerance mm : +- 0.55 Rated speed rpm : 1300
Tolerance - cm3/1000 strokes : +- 1.5 - Check tolerance - cm3/1000S. : +- 3.0 - Spreed -	rack travel mm : 4.00 Rated speed rpm : 1165 Tolerance 1/min : +- 15
Tolerance - cm3/1000 strokes : 2.0 - Check tolerance -	
cm3/1000s. : 4.0	LOW IDLE
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	control lever position degree : 72.0 tolerance degree : +- 4.0
GUIDE SLEEVE POSITION	Setting point w/out bumper spring
control lever position degree : FREE	- Rated speed rpm : 300 - Tolerance mm : + 0.10 - - Testing:
governor spring - pre-tension - click setting x : 2.50 -	- Rated speed rpm : 300 - Tolerance mm : +- 0.10
FULL LOAD DELIVERY AT FULL LOAD STOP - Rated speed rpm : 1000 -	TORQUE CONTROL Rated speed rpm : 1000 rack travel mm : 10.20 Tolerance mm : + 0.05
Aneroid pressure  hPa :  Del. quantity -  cm3/1000 strokes : 60.0 -  Tolerance -  cm3/1000 strokes : + 0.5 -  Check tolerance -	Rated speed rpm : 600 - rack travel mm : 10.20 - Tolerance mm : +- 0.10
cm3/1000S. : + 2.5 - Spreed - Tolerance -	- FUEL DELIVERY CHARACTERISTICS
cm3/1000 strokes : 2.5 Check tolerance cm3/1000s. : 4.0	Aneroid pressure hPa : - Rated speed rpm : 600 Del. quantity
CONTROL LEVER	- cm3/1000 strokes : 49.5 - Tolerance - cm3/1000 strokes : +- 1.5
control lever position degree : 95.0	- Check tolerance - cm3/1000s. : +- 3.0

	:	4.5	
Check tolerance cm3/1000s.	:	6.0	
Aneroid pressure	:		
Tolerance		1.5	
cm3/1000 strokes Check tolerance	; <del>, -</del>		
cm3/1000s. Spreed	: +-	3.5	
Tolerance cm3/1000 strokes	:	3.0	
Check tolerance cm3/1000s.	•	5.5	
	-		
STARTING FUEL DEL	.IVERY	<del></del>	
Rated speed rpm	:	100	
rack travel mm Tolerance mm	: +-	21.00 0.25	
Tolerance	• •		
cm3/1000 strokes Check tolerance	: +-	7.5	
cm3/1000s.	: +-	10.0	
LOW IDLE	···	<del></del>	
		700	
Rated speed rpm Tolerance mm	: +-	300 0.10	
Del. quantity cm3/1000 strokes	:	15.0	
Tolerance cm3/1000 strokes		1.5	
Check tolerance	: +-		
cm3/1000s. Spr <del>ee</del> d	: +-	3.0	
Tolerance cm3/1000 strokes	:	2.0	
Check tolerance	•		
cm3/1000s.	:	4.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 27,10,98 : ISO 4113

Combination No. : 0 403 466 183DA

Injection pump

Pump designation : PES6MW100/120RS1247

EP type number : 0 413 406 248

Governor

Governer design. : RSV550...1100MW5A415

Governer no. : 0 420 085 306

Cust. part No. : 3935489

Customer-spec. information Customer : CDC : 6 CTA : 179.0 Motor Power KW

#### TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 093

Inlet press. bar : 2.0 Tolerance bar :  $\leftarrow$  0.1

Test nozzle holde

assembly

: 1 688 901 101

Opening pressure

bar

208.5

Tolerance bar : +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

B14

x inside diameter: 2.0 x Length mm :

600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar : +- 1.0

Prestroke mm : 3.20 Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

Phasing

: 0-60-120-180-240

: -300

Tolerance

: +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery blocking

°NW after s.o.d. : 8.50

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack

travel : 15.00 Difference ° CS : 1.50

		+	
BASIC SETTING		<pre>- governor spring - pre-tension</pre>	
Rated speed rpm	: 1100	click setting x :	4.50
Rack travel in mm :	: 13.20	FULL LOAD DELIVERY	AT FULL LOAD STOP
	: +- 0.05 	Rated speed rpm : Aneroid pressure	
Del. quantity cm3/1000 strokes	163.0	hPa : Del. quantity cm3/1000 strokes :	1200 163.0
Tolerance cm3/1000 strokes :	: ← 1.0	Tolerance cm3/1000 strokes : Check tolerance	
Check tolerance cm3/1000S.	+- 4.0	cm3/1000s. : + Spreed	+- 4.0
Spreed		Tolerance cm3/1000 strokes : Check tolerance	4.0
Tolerance cm3/1000 strokes :	4.0	cm3/1000s. :	7.5
Check tolerance cm3/1000S.	7.5	CONTROL LEVER	<del></del>
Rated speed rpm :	550	control lever position degree : tolerance degree :	104.0 +- 4.0
		+	,,,
	5.05 +- 0.10	+ RATED SPEED + rack travel mm :	12.20
Del. quantity cm3/1000 strokes :	23.0	Rated speed rpm : Tolerance 1/min :	1170 +- 5
Tolerance		+ Check	
cm3/1000 strokes : Check tolerance		speed 1/min :	+- 10
cm3/1000s. : Spreed	+- 4.5	+ rack travel mm : + Rated speed rpm :	4.00 1255
Tolerance	3.5		+- 5
cm3/1000 strokes : Check tolerance		1	<del>←</del> 10
cm3/1000s. :	5.5	+ rack travel mm :	1.00
(D) OF THE	CTTON DUMP	+ Tolerance mm :	<b>←</b> 0.70
(B) SETTING OF INJEWITH GOVERNOR	CLION PUMP	Rated speed rpm :	1300
		+ rack travel mm : + Rated speed rpm :	4.00 1265
		+ Tolerance 1/min :	+ 15
GUIDE SLEEVE POSITI	ON	+ Check + speed 1/min :	<b>←</b> 20
control lever	7	+	
position degree : Rated speed rpm :	- 3 800	‡	
·		+ LOW IDLE	
Rack travel in mm : Tolerance mm :	0.50 +- 0.20	‡	

B15

control lever position degree : 78.0 tolerance degree : +- 4.0 Control lever difference 26.0 Grad tolerance degree : +- 6.0 Setting point w/out bumper spring Rated speed rpm : 550 rack travel mm : 4.55 rack travel mm : +- 0.10Tolerance mm Rated speed rpm : 100 CRT mm min. : > 19.00 Testing: rack travel mm : 5.05
Tolerance mm Tolerance mm : + 0.10 TORQUE CONTROL Rated speed rpm : 1100 rack travel mm : 13.20 Tolerance mm : +- 0.05 Rated speed rpm : 750 rack travel mm : 13.55 Tolerance mm : ← 0.10 Rated speed rpm : 1000 rack travel mm : 13.55 Tolerance mm : +- 0.20 ANEROID/ALTITUDE COMPENSATOR TEST SETTING Rated speed rpm : 500 Pressure hPa : 1200 500 Rated speed rpm : Pressure hPa : rack travel mm : 11.00 : +- 0.20 Tolerance mm **MEASUREMENT** 500 Rated speed rpm : Pressure hPa : 900 rack travel mm : 13.30

Tolerance mm : +- 0.20 Pressure hPa : 560 rack travel mm : 11.80 Tolerance mm : + 0.20 FUEL DELIVERY CHARACTERISTICS Aneroid pressure 1200 hPa Rated speed rpm : 1000 Del. quantity cm3/1000 strokes : 170.5 Tolerance cm3/1000 strokes :  $\leftarrow$  2.0 Check tolerance cm3/1000s. : +- 5.0 Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance : 9.0 cm3/1000s. Aneroid pressure Rated speed rpm : 500 Del. quantity cm3/1000 strokes : 119.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 3.0 STARTING FUEL DELIVERY Rated speed rpm : 100 rack travel mm : 20.50 Tolerance mm :  $\leftarrow$  1.00 Del. quantity cm3/1000 strokes : 140.0 Tolerance cm3/1000 strokes : +- 10.0 Check tolerance cm3/1000s. : + 13.0 LOW IDLE Rated speed rpm : 550 Rack travel in mm: 5.05 Tolerance mm : + 0.10

Del. quantity cm3/1000 strokes	:	23.0
Tolerance cm3/1000 strokes Check tolerance	: +-	2.0
cm3/1000s. Spreed	: +-	4.5
Tolerance cm3/1000 strokes Check tolerance	:	3.5
cm3/1000s.	:	5.5

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 19.10.98 : ISO 4113

Combination No. : F 002 A07 057CB

Injection pump

Pump designation : PES4A95D320/3RS2927

EP type number : F 002 A10 017

Governor

Governer design. : RSV475...1250A0C936R

Governer no. : F 002 A20 241

Cust. part No. : 3934890

Customer-spec. information Customer : CDC Motor : 4BNA3.9 Power KW : 59.7

## TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet temp. °C : 40 Tolerance °C : +- 2.0

Overflow valve : 2 417 413 093

Inlet press. bar : 2.0 Tolerance bar :  $\leftarrow$  0.1

Test nozzle holde

assembly : 1 688 901 101

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 500

## **REMARKS**

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : +- 1.0

Prestroke mm : 2.85
Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm: 10.50 Tolerance mm : ← 1.50

Firing order : 1-3-4-2

: 0-90-180-270 Phasing

Tolerance : <del>←</del> 0.50

Check

tolerance °NW : +- 0.75

Start of delivery blocking

\*NW after s.o.d. : 10.25 Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : + 0.75

Barrel no. : 1

## BASIC SETTING

Rated speed rpm : 1250

Rack travel in mm : 10.20 Tolerance mm : +- 0.05

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1	- Aneroid pressure
Del. quantity	- hPa : -
cm3/1000 strokes : 92.0	- Del. quantity
T-1	- cm3/1000 strokes : 92.0
Tolerance + 1.0 + 1.0	- Tolerance - cm3/1000 strokes : +- 1.0
Chis/ 1860 Strokes : 1 1.0	- Check tolerance
Check tolerance	-  cm3/1000S. : +- 3.0
cm3/1000s. : +- 3.0 +	· <u>Spreed</u>
Spread	· Tolerance · cm3/1000 strokes : 3.5
Spreed	Check tolerance
Tolerance	cm3/1000s. : 6.0
cm3/1000 strokes : 3.5	•
†	
Check tolerance + cm3/1000s. : 6.0	CONTROL LEVER
Cirist 10005 0.0	CONTROL LEVER
+	control lever
+	position degree : 91.0
Rated speed rpm : 475	tolerance degree : +- 4.0
Rack travel in mm: 5.00	RATED SPEED
Tolerance mm : +- 0.10	rack travel mm : 9.20
Del. quantity	Rated speed rpm : 1340
cm3/1000 strokes : 13.5	Tolerance 1/min : + 5
Tolerance +	
cm3/1000 strokes : +- 2.0 +	rack travel mm : 4.00
Check tolerance	Rated speed rpm : 1400
cm3/1000s. : +- 4.5	Tolerance 1/min : +- 5
Spreed + Tolerance +	rack travel mm : 0.85
cm3/1000 strokes : 3.5	Tolerance mm : + 0.55
Check tolerance	Rated speed rpm : 1475
cm3/1000s. : 5.5	nated speed (pin : 1475
+	rack travel mm : 4.00
Ì	Rated speed rpm : 1400
(B) SETTING OF INJECTION PUMP +	Tolerance 1/min : + 15
WITH GOVERNOR +	
†	
GUIDE SLEEVE POSITION	LOW IDLE
<del> </del>	
+	
control lever	control lever
position degree : -3	position degree : 70.0
Rated speed rpm : 800	tolerance degree : +- 4.0
Rack travel in mm: 0.50	Control lever difference
Tolerance mm : + 0.20	
<del> </del>	Grad : 21.0 tolerance degree : +- 6.0
governor spring +	
pre-tension +	Setting point w/out bumper spring
click setting $x$ : 3.50 $+$	Rated speed rpm : 475
<u></u> Ī	rack travel mm : 475
FULL LOAD DELIVERY AT FULL LOAD STOP	Tolerance mm : +- 0.10
+	
Rated speed rpm : 1250	Rated speed rpm : 100

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CRT mm min. : > 19.00

Testing:

475 Rated speed rpm rack travel mm : 5.00 : +- 0.10 Tolerance mm

TORQUE CONTROL

Rated speed rpm : 1250 rack travel mm : 10.20 Tolerance mm : +- 0.05

Rated speed rpm : 600

## STARTING FUEL DELIVERY

100 Rated speed rpm rack travel mm : 20.50 : +- 0.50 Tolerance mm Del. quantity

cm3/1000 strokes : 120.0

Tolerance cm3/1000 strokes : + 10.0

Check tolerance

cm3/1000S. : <del>+-</del> 15.0

# LOW IDLE

Rated speed rpm : 475

Rack travel in mm: 5.00 : +- 0.10 Tolerance mm Del. quantity

cm3/1000 strokes : 13.5

Tolerance

cm3/1000 strokes :  $\leftarrow$  2.0

Check tolerance

cm3/1000S. : **←** 4.5

Spreed

Tolerance

3.5 cm3/1000 strokes :

Check tolerance

: 5.5 cm3/1000S.

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 23.10.98 Test oil : 23.70.98

Combination No. : 0 401 876 810

Injection pump

Pump designation : PE6P120A320RS3359 EP type number : 0 411 826 815

Governor

Governer design. : RSV325...1200P1A615

Governer no. : 0 421 833 503

Cust. part No. : 3825515 PO2 v. 10/95

Customer-spec. information Customer : PENTA
Motor : TD 730ME
Power KW : 150.0

TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp.  $^{\circ}$ C : 40 Tolerance  $^{\circ}$ C : + 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Overflow quantity min. L/h : 220 Tolerance L/h : + 20.0

Test nozzle holde

: 1 688 901 101 assembly

Opening pressure

: 208.5 bar Tolerance bar : + 1.5 Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter :

x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 3.35 Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm : 9.40 Tolerance mm : + 0.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0--60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1200

	+	
Rack travel in mm : Tolerance mm : +		FULL LOAD DELIVERY AT FULL LOAD STOP
Del. quantit/ cm3/1000 s.rokes :	123.0	Rated speed rpm : 1200 Aneroid pressure
Tolerance cm3/1000 trokes : +	<del> </del>	hPa : 1500 Del. quantity cm3/1000 strokes : 123.0
Check tolerance cm3/1000s. : +	- 4.0	Tolerance cm3/1000 strokes : +- 1.0 Check tolerance
Spreed	+	cm3/1000S. : +- 4.0 Spreed
Tolerance cm3/1000 strokes :	7.0	Tolerance cm3/1000 strokes : 7.0 Check tolerance
Check tolerance cm3/1000s. :	11.0	cm3/1000s. : 11.0
	<del></del> ‡	CONTROL LEVER
Rated speed rpm :	325	control lever position degree : 70.0
Rack travel in mm : Tolerance mm : + Del. quantity		tolerance degree : +- 4.0 control lever
cm3/1000 strokes : Tolerance	+	position degree : 120.0 tolerance degree : +- 4.0
cm3/1000 strokes : + Check tolerance	+	RATED SPEED
cm3/1000S. : + Spreed Tolerance	- 5.0	rack travel mm : 10.00 Rated speed rpm : 1235 Tolerance 1/min : +- 5
cm3/1000 strokes : Check tolerance	3.0	rack travel mm : 4.00
cm3/1000s. :	6.0	Rated speed rpm : 1280 Tolerance 1/min : +- 15
(B) SETTING OF INJECT: WITH GOVERNOR	ION PUMP	rack travel mm : 0.85 Tolerance mm : + 0.55 Rated speed rpm : 1400
GUIDE SLEEVE POSITION	+	
control lever	‡	LOW IDLE
position degree : -	3	
Rated speed rpm :		control lever position degree : 80.0
Rack travel in mm : Tolerance mm : +		tolerance degree : + 4.0
governor spring	<u> </u>	control lever position degree : 30.0
pre-tension	+	tolerance degree : +- 4.0
click setting x :	5.75	Setting point w/out bumper spring

Rated speed rpm rack travel mm Tolerance mm	: 325 : 4.10 : +- 0.10	+ Rated + Del. + cm3/1 + Toler
Testing:		+ cm3/1
Rated speed rpm rack travel mm Tolerance mm	: 4.60	+ Check + cm3/1 + Spree + Toler + cm3/1
rack travel mm Rated speed rpm Tolerance 1/min	: 2.00 : 390 : ← 30	Check
		Anero
TORQUE CONTROL	. 1200	+ hPa
Rated speed rpm	: 1200 : 11.00	+ Rated + Del.
rack travel mm Tolerance mm	: + 0.05	+ cm3/1
10 COL GITTO THE		Toler
Rated speed rpm	: 700	+ cm3/1
rack travel mm	: 11.00	+ Check
Tolerance mm	: <del>+-</del> 0.10	+ cm3/1
ANEROID/ALTITUDE COMPENSATOR TEST		+
SETTING		LOW I
Rated speed rpm	: 500	∓ Rated
Rated speed rpm Pressure hPa	: 1500	+
rack travel mm	: 11.00	+ Rack
Tolerance mm	: +- 0.05	+ Toler
Rated speed rpm	: 500	+ Del. + cm3/1
Pressure hPa	: -	+ Toler
rack travel mm		+ cm3/1
Tolerance mm	: +- 0.20	+ Check
MEACIDEMENT		+ cm3/1
MEASUREMENT		+ Spree + Toler
Rated speed rpm	: 500	+ cm3/10
D		+ Check
Pressure hPa rack travel mm	: 490 : 1.10	t cm3/10
Tolerance mm	: + 0.15	Ŧ
Pressure hPa	: 290	‡
rack travel mm	: 0.25	+
Tolerance mm	: +- 0.05	End o
		‡
FUEL DELIVERY CH/	ARACTERISTICS	+
Aneroid pressure		‡
hPa	: 1500	+

Rated speed rpm Del. quantity	: 700
cm3/1000 strokes	: 141.0
Tolerance cm3/1000 strokes Check tolerance	: +- 3.0
cm3/1000s. Spreed	: +- 6.0
Tolerance cm3/1000 strokes	: 7.0
Check tolerance cm3/1000s.	: 11.0
Anaroid pressure	
Aneroid pressure	
hPa Rated speed rpm	: – : 500
hPa Rated speed rpm Del. quantity cm3/1000 strokes	: - : 500 : 95.0
hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	. 555
hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance	: 95.0

ì.	UM.	TNI	

Rated speed rpm	:	325
Rack travel in mm Tolerance mm Del. quantity	: +-	4.60 0.10
cm3/1000 strokes Tolerance	:	25.0
cm3/1000 strokes Check tolerance	: +-	2.5
cm3/1000S. Spreed Tolerance	: +-	5.0
cm3/1000 strokes Check tolerance	:	3.0
cm3/1000s.	:	6.0

test specification sheet

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 22,10,98 : ISO 4113

Combination No. : 0 402 036 745

Injection pump

Pump designation : PES6P110A720/3LS3131

: -3

EP type number : 0 412 016 734

Governor

Governer design. : RQ300/1100PA722-1

Governer no. : 0 421 801 461

Cust. part No. :

Customer-spec. information : MB-NFZ Customer : OM447 Motor : 152.0 Power KW

# TEST BENCH REQUIREMENTS

Inlet line

: 4.1

Test oil inlet

temp. °C 40 : +- 2.0 Tolerance °C

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0

Overflow quantity

: 110 min. L/h Tolerance L/h : + 10.0

Test nozzle holde

assembly : 0 681 343 009

Opening pressure

: 173.5 bar : +- 1.5 Tolerance bar

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter :

x Length mm : 600

## REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

26.0 Test pressure bar : Tolerance bar : +- 1.0

Prestroke mm Tolerance mm : 4.35 : +- 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm: 10.50 Tolerance mm : +- 1.50

Firing order : 6-2-4-1-5-: 3

: 0-60-120-180-240 Phasing

: -300

Tolerance : +- 0.50

Check

: +- 0.75 tolerance °NW

Start of delivery mark

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Barrel no. : 6

#### BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  0.05

	1	guide sleeve
Del guantity		travel mm : 5.74
Del. quantity cm3/1000 strokes	: 130.0	Tolerance mm : +- 0.10
Tolerance		Rated speed rpm : 470
cm3/1000 strokes	· + 10 I	quide sleeve
CIIIST TOOD SET ORES	1.0	travel mm : 7.00
Check tolerance		Tolerance mm : +- 0.10
	: <del>+- 3.5 +</del>	
	1	Rated speed rpm : 1260
Spr <del>ee</del> d	+	guide sleeve
	1	travel mm : 11.50
Tolerance	+	Tolerance mm : + 0.50
cm3/1000 strokes	: 4.0	
	<del> </del>	
Check tolerance	+	GUIDE SLEEVE POSITION
cm3/1000S.	: 8.0 +	
	+	
	+	control lever
	+	position degree : - 1
Rated speed rpm	: 300 +	Rated speed rpm : 600
	+	
Rack travel in mm	: 7.30 <del> </del>	Rack travel in mm : 13.00
Tolerance mm	: ← 0.10 +	Tolerance mm : +- 0.50
Del. quantity	+	
cm3/1000 strokes	: 17.0	
Tolerance	+	FULL LOAD DELIVERY AT FULL LOAD STOP
cm3/1000 strokes	: <b>←</b> 3.0 }	
Check tolerance	<del>-</del>	Rated speed rpm : 1100
cm3/1000S.	: +- 6.0 <del>}</del>	Aneroid pressure
Spreed	+	hPa : -
Tolerance	+	Del. quantity
cm3/1000 strokes	: 4.0	cm3/1000 strokes : 130.0
Check tolerance	+	Tolerance
cm3/1000S.	: 8.0 <del>}</del>	cm3/1000 strokes : +- 1.0
	<del>-</del>	Check tolerance
	<del>}</del>	cm3/1000s. : +- 3.5
(E) SETTING OF INJE	ECTION PUMP +	Spreed
WITH GOVERNOR	<del>-</del>	Tolerance
	+	cm3/1000 strokes : 4.0
<del></del>	<del></del> }	Check tolerance
GUIDE SLEEVE TRAVEL	<u> </u>	cm3/1000s. : 8.0
	+	
Rated speed rpm :	: 1159	
guide sleeve	+	
travel mm :	: 7.65	CONTROL LEVER
	: +- 0.15 <del> </del>	
	+	control lever
Rated speed rpm :	: 300 +	position degree : 102.0
guide sleeve	+	tolerance degree : +- 4.0
travel mm :	: 1.65 +	
	: ← 0.20 }	RATED SPEED
	+	rack travel mm : 9.50
Rated speed rpm :	: 1100 +	Rated speed rpm : 1153
guide sleeve	+	Tolerance 1/min : +- 8
	: 7.00	
	: +- 0.10	rack travel mm : 4.00
	+	Rated speed rpm : 1190
Rated speed rpm :	: 396 +	Tolerance 1/min : +- 15
, ,	<del> </del>	
	'	

LOW IDLE

control lever

position degree : 78.0 tolerance degree : +- 4.0

Setting point w/out bumper spring

Rated speed rpm : 100

CRT mm min. : > 8.80

Testing:

Rated speed rpm : 300 rack travel mm : 7.30 Tolerance mm : + 0.10

rack travel mm : 2.00
Rated speed rpm : 388
Tolerance 1/min : + 20

TORQUE CONTROL

Rated speed rpm : 1100 rack travel mm : 10.50 Tolerance mm : + 0.05

Rated speed rpm : 600 rack travel mm : 10.50 Tolerance mm :  $\leftarrow 0.10$ 

# FUEL DELIVERY CHARACTERISTICS

Aneroid pressure hPa Rated speed rpm : 600 Del. quantity cm3/1000 strokes : 100.0 Tolerance cm3/1000 strokes : +- 2.0 Check tolerance cm3/1000s. : +- 5.0 Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance

9.0

STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity

cm3/1000 strokes : 140.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  10.0

Check tolerance

cm3/1000s. : +- 14.0

LOW IDLE

Rated speed rpm : 300

Rack travel in mm : 7.30 Tolerance mm : +- 0.10

Del. quantity cm3/1000 strokes : 17.0

Tolerance

cm3/1000 strokes : +- 3.0

Check tolerance

cm3/1000S. : +- 6.0

Spreed Tolerance

cm3/1000 strokes : 4.0

Check tolerance

cm3/1000S. : 8.0

End of test specification sheet

cm3/1000S.

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 22.10.98 : ISO 4113

Combination No. : 0 402 036 745H

Injection pump

Pump designation : PES6P110A720/3LS3131

: -3

EP type number : 0 412 016 734

Governor

Governer no.

Governer design. : RQ300/1100PA722-1

: 0 421 801 461

Cust. part No. :

Customer-spec. information : MB-NFZ Customer : 0M447

Motor Power KW

: 152.0

# TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

: +- 2.0 Tolerance °C

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0

Overflow quantity

min. l/h : 110 Tolerance l/h : ← 10.0

Test nozzle holde

assembly : 0 681 343 009

Opening pressure

: 173.5 bar Tolerance bar : + 1.5 Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 4.35 Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50

Tolerance mm : +- 1.50

Firing order : 6-2-4-1-5-

: 0-60-120-180-240 Phasing

: -300

: +- 0.50 Tolerance

Check

: +- 0.75 tolerance °NW

Start of delivery mark

Tolerance :  $\leftarrow$  0.50

Check

tolerance  $^{\circ}NW$  : + 0.75

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 10.50

Tolerance mm :  $\leftarrow$  0.05

		→ guide sleeve
Del. quantity cm3/1000 strokes	: 117.0	travel mm : 5.70 Tolerance mm : +- 0.10
Tolerance cm3/1000 strokes	: +- 1.0	Rated speed rpm : 470 guide sleeve travel mm : 7.00
Check tolerance cm3/1000s.	: ← 3.5	Tolerance mm : +- 0.10
Spreed		Rated speed rpm : 1260 guide sleeve travel mm : 11.50
Tolerance cm3/1000 strokes	: 4.0	Tolerance mm : +- 0.50
Check tolerance cm3/1000S.	: 8.0	GUIDE SLEEVE POSITION
Dated aread pro-	. 700	control lever position degree : -1
Rated speed rpm	: 300	+ Rated speed rpm : 600
Rack travel in mm Tolerance mm Del. quantity	: 7.30 : +- 0.10	Rack travel in mm: 13.00 Tolerance mm: +- 0.50
cm3/1000 strokes Tolerance cm3/1000 strokes		FULL LUAD DELIVERY AT FULL LOAD STOP
Check tolerance cm3/1000s.	: +- 6.0	Rated speed rpm : 1100 Aneroid pressure
Spreed Tolerance cm3/1000 strokes	: 4.0	+ hPa : - + Del. quantity + cm3/1000 strokes : 117.0
Check tolerance cm3/1000s.	: 8.0	+ Tolerance + cm3/1000 strokes : + 1.0
(B) SETTING OF IN	IECTION DIMP	+ Check tolerance + cm3/1000S. : + 3.5 + Spreed
WITH GOVERNOR	PECITOR FOR	Tolerance + cm3/1000 strokes : 4.0
GUIDE SLEEVE TRAVI	EL	Check tolerance cm3/1000s. : 8.0
Rated speed rpm guide sleeve	: 1157 : 7.44	CONTROL LEVER
travel mm Tolerance mm	: + 0.15	+
Rated speed rpm guide sleeve	: 300	control lever position degree : 102.0 tolerance degree : +- 4.0
travel mm Tolerance mm	: 1.59 : +- 0.20	RATED SPEED
Rated speed rpm		+ rack travel mm : 9.50 + Rated speed rpm : 1153
guide sleeve travel mm	: 7.00	Tolerance 1/min : + 8
Tolerance mm	: +- 0.10	rack travel mm : 4.00 Rated speed rpm : 1190
Rated speed rpm	: 396	+ Tolerance 1/min : +- 15 +

LOW IDLE

control lever

position degree : 78.0 tolerance degree : +- 4.0

Setting point w/out bumper spring

Rated speed rpm : 300

CRT mm min. :>8.80

Testing:

Rated speed rpm : 300 rack travel mm : 7.30 Tolerance mm : +- 0.10

rack travel mm : 2.00
Rated speed rpm : 388
Tolerance 1/min : + 20

TORQUE CONTROL

Rated speed rpm : 1100 rack travel mm : 10.50 Tolerance mm : + 0.05

Rated speed rpm : 600 rack travel mm : 10.50 Tolerance mm : +- 0.10

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa : -Rated speed rpm : 600

Del. quantity

cm3/1000 strokes : 88.0

Tolerance

cm3/1000 strokes : +- 2.0

Check tolerance

cm3/1000s. : +- 5.0

Spreed

Tolerance

cm3/1000 strokes : 6.0

Check tolerance

cm3/1000s. : 9.0

STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity

cm3/1000 strokes : 140.0

Tolerance

cm3/1000 strokes : +- 10.0

Check tolerance

cm3/1000S. : +- 14.0

LOW IDLE

Rated speed rpm : 300

Rack travel in mm : 7.30 Tolerance mm : + 0.10

Del. quantity

cm3/1000 strokes : 17.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  3.0

Check tolerance

cm3/1000s. : + 6.0

Spreed Tolerance

cm3/1000 strokes : 4.0

Check tolerance

cm3/1000s. : 8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 22.10.98 Edition : ISO 4113 Test oil

Combination No. : 0 402 076 748

Injection pump

Pump designation : PES6P110A720RS3305

: -1

EP type number : 0 412 016 742

Governor

Governer design. : RSV300...1100P1A555

Governer no. : 0 421 833 379

Cust. part No. : 9271058

Custome: - spec. information

Customer : LIEBHERR
Motor : 0.926 TT-: D 926 TI-E A2 Motor

: 210.0 Power KW

#### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C Tolerance °C : +- 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5 Tolerance bar : ← 0.1

Overflow quantity
min. l/h : 175
Tolerance l/h : +- 20.0

Test nozzle holde

assembly : 1 688 901 101

Opening pressure

: 207.5 Tolerance bar : +- 1.5 Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 3.20 Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300 Tolerance : **←** 0.50

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Start of delivery mark

Tolerance :  $\leftarrow$  0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

990 Rated speed rpm :

Rack travel in mm : 12.00

CO2

Tolerance mm : +- 0.05	+ Rated speed rpm : 990
Del. quantity	+ Aneroid pressure + hPa : 1300
cm3/1000 strokes : 180.0	+ Del. quantity + cm3/1000 strokes : 180.0
Tolerance cm3/1000 strokes : +- 1.0	+ Tolerance + cm3/1000 strokes : +- 1.0 + Check tolerance
Check tolerance cm3/1000S. : + 3.5	+ cneck toterance + cm3/1000s. : +- 3.5 + Spreed
Spreed	Tolerance cm3/1000 strokes : 5.0
Tolerance cm3/1000 strokes : 5.0	+ Check tolerance + cm3/1000S. : 7.5
Check tolerance	CONTROL LEUED
cm3/1000s. : 7.5	+ CONTROL LEVER
	+ control lever + position degree : 104.0
Rated speed rpm : 400	tolerance degree : +- 4.0
Rack travel in mm: 4.00	<del>-</del>
Tolerance mm : + 0.10 Del. quantity	ASSEMBLY GOVERNOR SETTING
cm3/1000 strokes : 26.0	Rated speed rpm : 1027
Tolerance cm3/1000 strokes : +- 3.0	<pre>+ Tolerance 1/min : + 1 + rack travel mm : 11.00</pre>
Check tolerance	+ rack travet min : 11.00
cm3/1000s. : + 5.5	Rated speed rpm : 1081
Spreed Tolerance	Tolerance 1/min : +- 4 rack travel mm : 4.00
cm3/1000 strokes : 6.0	+
Check tolerance	+ rack travel mm : 0.85
cm3/1000s. : 7.5	Tolerance mm : +- 0.55 + Rated speed rpm : 1300
	+ Hatea speed (pm)
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	+ Rated speed rpm : 1028
WITH GOVERNOR	Tolerance 1/min : + 1
	rack travel mm : 11.00
GUIDE SLEEVE POSITION	+ Rated speed rpm : 1082
	+ Tolerance 1/min : +- 4
control lever	rack travel mm : 4.00
position degree : - 3	Track travel mm : 0.85
Rated speed rpm : 800	+ Tolerance mm : +- 0.55
Rack travel in mm : 0.50	Rated speed rpm : 1300
Tolerance mm : + 0.20	Į
	Rated speed rpm : 1029
governor spring pre-tension	Tolerance 1/min : + 1 rack travel mm : 11.00
click setting x : 4.75	+
	Rated speed rpm : 1083
FULL LOAD DELIVERY AT FULL LOAD STOP	Tolerance 1/min : +- 4 rack travel mm : 4.00
TOLE LOND DELLYEN AT TOLE LOND STOT	+

rack travel mm Tolerance mm Rated speed rpm Rated speed rpm Tolerance 1/min rack travel mm	: +- 0.55 : 1300 : +- 1	<u> </u>	rack travel mm Tolerance mm rack travel mm Rated speed rpm Tolerance 1/min	: +- 0.10
Rated speed rpm Tolerance 1/min rack travel mm	: 1084 : +- 4 : 4.00	+ !	TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	
rack travel mm Tolerance mm Rated speed rpm	: 0.85 : +- 0.55 : 1300	† ! + ! + .	Rated speed rpm rack travel mm Tolerance mm	: 500 : 12.00 : + 0.10
Rated speed rpm Tolerance 1/min rack travel mm	: ← 1 : 11.00	+ (	ANEROID/ALTITUDE COMPENSATOR TEST	
Rated speed rpm Tolerance 1/min rack travel mm	: 1085 : +- 4	+	SETTING	
rack travel mm	: 0.85	+ 1	Rated speed rpm Pressure hPa rack travel mm Folerance mm	: 12.00
Tolerance mm Rated speed rpm Rated speed rpm		+ + F	Rated speed rpm Pressure hPa rack travel mm	: 550
Tolerance 1/min rack travel mm	: ← 1 : 11.00	† 1 †	Tolerance mm  MEASUREMENT	: +- 0.15
Rated speed rpm Tolerance 1/min rack travel mm	: 1086 : +- 4 : 4.00	+	Rated speed rpm	
rack travel mm Tolerance mm Rated speed rpm	: <del>+-</del> 0.55	† '	Pressure hPa rack travel mm Folerance mm Pressure hPa	: 11.50 : +- 0.05
LOW IDLE			Pressure hPa rack travel mm Folerance mm	: 11.00 : +- 0.15
control lever position degree tolerance degree	: 76.0 : +- 4.0	+ - + F +	FUEL DELIVERY CHA	RACTERISTICS
Setting point w/o	ut bumper spring		Aneroid pressure	: 1300
Rated speed rpm rack travel mm Tolerance mm	: 400 : 3.50 : +- 0.10	+ R	Rated speed rpm Del. quantity cm3/1000 strokes	: 500
Testing:		+ T + c	Tolerance cm3/1000 strokes	
Rated speed rpm	: 400	+ 0	Check tolerance cm3/1000s.	: + 6.0

Aneroid pressure hPa 550 Rated speed rpm Del. quantity cm3/1000 strokes : 170.0

Tolerance cm3/1000 strokes : +-1.0

Check tolerance

: +- 3.5 cm3/1000s.

# STARTING FUEL DELIVERY

Rated speed rpm : 100 rack travel mm : 20.50 : **←** 0.50 Tolerance mm Del. quantity cm3/1000 strokes : 150.0

Tolerance

cm3/1000 strokes : +- 10.0

Check tolerance

cm3/1000s. : +- 14.0

# LOW IDLE

400 Rated speed rpm :

4.00 Rack travel in mm : Tolerance mm : **←** 0.10 Del. quantity cm3/1000 strokes : 26.0 Tolerance cm3/1000 strokes : +- 3.0

Check tolerance cm3/1000s. : +-5.5 Spreed

Tolerance

cm3/1000 strokes : 6.0

Check tolerance

7.5 cm3/1000s.

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 22.10.98 Edition : ISO 4113 Test oil

Combination No. : 0 402 076 748I

Injection pump

Pump designation : PES6P110A720RS3305

: -1

EP type number : 0 412 016 742

Governor

Governer design. : RSV300...1100P1A555

Governer no. : 0 421 833 379

Cust. part No. : 9880883

Customer-spec. information

Customer : LIEBHERR : D 926 TI-E A2 Motor

: 210.0 Power KW

# TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp, °C Tolerance °C

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5 Tolerance bar : +- 0.1

Overflow quantity

min. L/h : 175 Tolerance L/h : +- 20.0

Test nozzle holde : 1 688 901 101

Opening pressure

: 207.5 bar Tolerance bar : +- 1.5 Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0

x Length mm : 600

#### **REMARKS**

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 3.20 Tolerance mm : +- 0.05

Check

: +- 0.10 tolerance mm

Rack travel in mm: 10.50 Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300 Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance :  $\leftarrow$  0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 990

Rack travel in mm : 12.00

C06

Tolerance mm : +- 0.05	+ Rated speed rpm : 990 + Aneroid pressure
Del. quantity cm3/1000 strokes : 180.0	+ hPa : 1300 + Del. quantity
Talanana	+ cm3/1000 strokes : 180.0 + Tolerance
Tolerance cm3/1000 strokes : +- 1.0	+ cm3/1000 strokes : +- 1.0 + Check tolerance
Check tolerance cm3/1000s. : +- 3.5	cm3/1000s. : +- 3.5 + Spreed + Tolerance
Spreed	cm3/1000 strokes : 5.0 Check tolerance
Tolerance cm3/1000 strokes : 5.0	cm3/1000s. : 7.5
Check tolerance cm3/1000s. : 7.5	CONTROL LEVER
	control lever
	position degree : 104.0
Rated speed rpm : 400	tolerance degree : +- 4.0
Rack travel in mm : 4.00	Į
Tolerance mm : +- 0.10	+ ASSEMBLY GOVERNOR SETTING
Del. quantity cm3/1000 strokes : 26.0	+ Rated speed rpm : 1027
Tolerance	+ Tolerance 1/min : +- 1
cm3/1000 strokes : +- 3.0	rack travel mm : 11.00
Check tolerance cm3/1000s. : +- 5.5	+ Rated speed rpm : 1081
Spreed	+ Tolerance 1/min : + 4
Tolerance	+ rack travel mm : 4.00
cm3/1000 strokes : 6.0 Check tolerance	+ rack travel mm : 0.85
cm3/1000s. : 7.5	+ Tolerance mm : + 0.55
	Rated speed rpm : 1300
(B) SETTING OF INJECTION PUMP	İ
WITH GOVERNOR	Rated speed rpm : 1028
	Tolerance 1/min : + 1
	track travel mm : 11.00
GUIDE SLEEVE POSITION	Rated speed rpm : 1082
	+ Tolerance 1/min : +- 4
control lever	+ rack travel mm : 4.00
position degree : - 3	rack travel mm : 0.85
Rated speed rpm : 800	+ Tolerance mm : +- 0.55
	Rated speed rpm : 1300
Rack travel in mm : 0.50 Tolerance mm : + 0.20	1
TOTEL ALICE THE . T U.20	Rated speed rpm : 1029
governor spring	+ Tolerance 1/min : +- 1
pre-tension	rack travel mm : 11.00
click setting x : 4.75	Rated speed rpm : 1083
	Tolerance 1/min : +- 4
FULL LOAD DELIVERY AT FULL LOAD STOP	rack travel mm : 4.00
	+

rack travel mm	: 0.85
Tolerance mm	: + 0.55
Rated speed rpm	: 1300
Rated speed rpm	: 1030
Tolerance 1/min	: + 1
rack travel mm	: 11.00
Rated speed rpm	: 1084
Tolerance 1/min	: +- 4
rack travel mm	: 4.00
rack travel mm	: 0.85
Tolerance mm	: +- 0.55
Rated speed rpm	: 1300
Rated speed rpm	: 1031
Tolerance 1/min	: + 1
rack travel mm	: 11.00
Rated speed rpm	: 1085
Tolerance 1/min	: + 4
rack travel mm	: 4.00
rack travel mm	: 0.85
Tolerance mm	: ← 0.55
Rated speed rpm	: 1300
Rated speed rpm	: 1032
Tolerance 1/min	: + 1
rack travel mm	: 11.00
Rated speed rpm	: 1086
Tolerance 1/min	: +- 4
rack travel mm	: 4.00
rack travel mm	: 0.85
Tolerance mm	: +- 0.55
Rated speed rpm	: 1300
LOW IDLE	
control lever position degree tolerance degree	: 76.0 : +- 4.0
Setting point w/o	ut bumper spring
Rated speed rpm	: 400
rack travel mm	: 3.50
Tolerance mm	: + 0.10
Testing:	
Rated speed rpm	: 400

rack travel mm Tolerance mm	: 4.00 : +- 0.10
rack travel mm Rated speed rpm Tolerance 1/min	: 490
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	: 990 : 12.00 : +- 0.05
Rated speed rpm rack travel mm Tolerance mm	: 500 : 12.00 : +- 0.10
ANEROID/ALTITUDE COMPENSATOR TEST	
SETTING	
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 1300
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 550 : - : 10.40 : +- 0.15
MEASUREMENT	
Rated speed rpm	: 550
Pressure hPa rack travel mm Tolerance mm	: 700 : 11.50 : ← 0.05
Pressure hPa rack travel mm Tolerance mm	: 645 : 11.00 : + 0.15
FUEL DELIVERY CHA	RACTERISTICS

Aneroid pressure
hPa : 1300
Rated speed rpm : 500
Del. quantity
cm3/1000 strokes : 205.0
Tolerance
cm3/1000 strokes : + 3.0
Check tolerance
cm3/1000s. : + 6.0

CO8

Aneroid pressure

hPa :

Rated speed rpm : 500

Del. quantity

cm3/1000 strokes : 170.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

cm3/1000s. : + 3.5

# STARTING FUEL DELIVERY

Rated speed rpm : 100 rack travel mm : 20.50 Tolerance mm : + 0.50

Del. quantity

cm3/1000 strokes : 150.0

Tolerance

cm3/1000 strokes : +- 10.0

Check tolerance

cm3/1000s. : +- 14.0

# LOW IDLE

Rated speed rpm : 400

Rack travel in mm : 4.00 Tolerance mm : + 0.10

Del. quantity

cm3/1000 strokes : 26.0

Tolerance

cm3/1000 strokes : +- 3.0

Check tolerance

cm3/1000s. : +- 5.5

Spreed

Tolerance

cm3/1000 strokes : 6.0

Check tolerance

cm3/1000s. : 7.5

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 22,10,98

Test oil

: ISO 4113

Combination No. : 0 402 076 822

Injection pump

Pump designation : PES6P110A320RS3400

EP type number : 0 412 016 759

Governor

Governer design. : RSV300...1000P1A695

Governer no.

: 0 421 833 618

Cust. part No. : 11032943 v. 25.02.98

Customer-spec. information

: VCE

#### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Customer

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 078

Inlet press. bar : 2.0

Overflow quantity

min. L/h : 190 Tolerance L/h : + 20.0

Test nozzle holde

assembly

: 1 688 901 101

Opening pressure

bar

208.5

Tolerance bar

: +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter :

x length mm :

600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0

Tolerance bar : +- 1.0

Prestroke mm

2.45

Tolerance mm

: +- 0.05

Check

tolerance mm

: +- 0.10

Rack travel in mm: 10.50

Tolerance mm

: +- 0.50

Firing order

: 1-5-3-6-2-

: 4

Phasing

: 0-60-120-180-240

: -300

Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

Start of delivery mark

Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

Barrel no.

: 1

# BASIC SETTING

Rated speed rpm :

700

Rack travel in mm : 13.30

Tolerance mm :  $\leftarrow$  0.05

Del. quantity cm3/1000 strokes	: 131.0	Tolerance mm : +- 0.25
Tolerance		+ Rated speed rpm : 1390 + guide sleeve
cm3/1000 strokes	: +- 1.0	travel mm : 11.50 Tolerance mm : + 0.50
Check tolerance		Total alice min . 7 - 0.30
cm3/1000s.	: +- 4.0	GUIDE SLEEVE POSITION
Spreed		<u>†</u>
Tolerance		control lever
cm3/1000 strokes	: 5.0	+ position degree : - 3
Charle Anlamana		+ Rated speed rpm : 800
Check tolerance cm3/1000s.	: 9.0	Rack travel in mm: 0.50
		governor spring
		+ pre-tension
Rated speed rpm	: 300	+ click setting x : 4.25
Daals Americal die een	. 9.70	†
Rack travel in mm Tolerance mm		FULL LOAD DELIVERY AT FULL LOAD STOP
Del. quantity		+ TOLE COMP DECEMENT AT TOLE COMP STOR
cm3/1000 strokes	: 49.0	Rated speed rpm : 700
Tolerance		+ Aneroid pressure
cm3/1000 strokes Check tolerance	: +- 2.0	+ hPa : 1500 + Del. quantity
cm3/1000s.	: <del></del> 5.0	+ cm3/1000 strokes : 131.0
Spreed		+ Tolerance
Tolerance		+ cm3/1000 strokes : +- 1.0
cm3/1000 strokes	: 7.0	+ Check tolerance
Check tolerance cm3/1000s.	: 11.0	+ cm3/1000s. : + 4.0 + Spreed
CIIIS/ TOOOS.	: 11.0	+ Tolerance
		+ cm3/1000 strokes : 5.0
(B) SETTING OF IN	JECTION PUMP	+ Check tolerance
WITH GOVERNOR		+ cm3/1000s : 9.0
		I
GUIDE SLEEVE TRAV	EL	ļ <del></del>
		+ CONTROL LEVER
Rated speed rpm	: 7762	+ control lever
guide sleeve travel mm	: 8.57	+ position degree : 106.0
Tolerance mm	: +- 0.15	tolerance degree : + 4.0
		+
Rated speed rpm	: 315	+ RATED SPEED
guide sleeve travel mm	: 1.61	+ rack travel mm : 12.30 + Rated speed rpm : 1022
Tolerance mm	: + 0.20	Tolerance 1/min : +- 5
. = ++,, +++ 11111		+
Rated speed rpm	: 818	rack travel mm : 4.00
guide sleeve	. 5 77	+ Rated speed rpm : 1075
travel mm Tolerance mm	: 5.37 : +- 0.25	+ Tolerance 1/min : +- 10
rocerance nan	5.25	rack travel mm : 0.85
Rated speed rpm	: 510	+ Tolerance mm : + 0.55
guide sleeve	<b>-</b> 44	+ Rated speed rpm : 1150
travel mm	: 3.11	+

#### LOW IDLE

control lever

position degree : 77.0 tolerance degree : + 4.0

Testing:

Rated speed rpm : 300 rack travel mm : 8.70

Tolerance mm : +- 0.10

rack travel mm : 2.00
Rated speed rpm : 370
Tolerance 1/min : + 30

SET IDLE AUXILIARY SPRING

rack travel mm : 2.00

TORQUE CONTROL

Rated speed rpm : 700 rack travel mm : 13.30

Tolerance mm : +- 0.05

# ANEROID/ALTITUDE COMPENSATOR TEST

#### SETTING

Rated speed rpm : 700
Pressure hPa : 1500
rack travel mm : 13.30
Tolerance mm : + 0.05

Rated speed rpm : 700
Pressure hPa : rack travel mm : 10.90
Tolerance mm : +- 0.10

#### **MEASUREMENT**

Rated speed rpm : 700

Pressure hPa : 660 rack travel mm : 2.00 Tolerance mm : + 0.20

Pressure hPa : 110 rack travel mm : 0.25 Tolerance mm : + 0.10

## FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa : Rated speed rpm : 700
Del. quantity
cm3/1000 strokes : 85.0

Tolerance

cm3/1000 strokes : +- 1.0 Check tolerance

cm3/1000s. : +- 4.0

#### LOW IDLE

Rated speed rpm : 300

Rack travel in mm : 8.70
Tolerance mm : + 0.10
Del. quantity
cm3/1000 strokes : 49.0
Tolerance
cm3/1000 strokes : + 2.0
Check tolerance
cm3/1000s. : + 5.0
Spreed
Tolerance
cm3/1000 strokes : 7.0

Check tolerance cm3/1000s. : 11.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 27.10.98 Edition Test oil : ISO 4113

Combination No. : 0 402 086 704

Injection pump

Pump designation : PES6P100B321RS3388 EP type number : 0 412 006 714

Governor

Governer design. : RSV400...1125P0A699

Governer no. : 0 421 833 625

Cust. part No. : 51.11103-7607

Customer-spec. information

Customer : MAN : D0826 LE531 Motor

Power KW : 191.0

# TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

40 temp. °C : +- 2.0 Tolerance °C

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0 Tolerance bar : + 0.1

Overflow quantity

min. l/h : 150 Tolerance l/h : +- 20.0

Test nozzle holde

: 1 688 901 101 assembly

Opening pressure

C13

: 208.5 bar Tolerance bar : + 1.5 Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 3.30 Tolerance mm : + 0.05 Check

tolerance mm : +- 0.10

Rack travel in mm : 13.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

: -300

Tolerance : **←** 0.50

Check

tolerance °NW : **←** 0.75

Start of delivery blocking

: +- 0.10 Tolerance

Check

tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 925

		+
Rack travel in m Tolerance mm	14.10 : +- 0.05	CONTROL LE
Del. quantity cm3/1000 strokes	: 174.0	control le position d tolerance
Tolerance cm3/1000 strokes	: + 1.0	RATED SPEE
Check tolerance cm3/1000s.	: +- 4.0	Rated spee
		rack trave Rated spee
Rated speed rpm	: 400	Tolerance
Del. quantity	: +- 0.10	rack trave Tolerance ( Rated spee
cm3/1000 strokes Tolerance	: 25.0	† + rack trave
cm3/1000 strokes Check tolerance		Rated spee Tolerance
cm3/1000s.	: ← 6.0	‡
(B) SETTING OF IN WITH GOVERNOR	UECTION PUMP	LOW IDLE
GUIDE SLEEVE POSI	TION	control le position d tolerance
control lever position degree Rated speed rpm		Setting po
Rack travel in mm Tolerance mm	: 0.50 : + 0.20	+ rack trave + Tolerance r
governor spring		Testing:
pre-tension click setting x	: 4.75	Rated speed rack trave Tolerance r
FULL LOAD DELIVER	Y AT FULL LOAD STOP	rack trave
Rated speed rpm	: 925	+ Rated speed + Tolerance
Aneroid pressure		ž.
Aneroid pressure hPa Del quantity	: 1500	TORQUE CONT
hPa Del. quantity cm3/1000 strokes		TORQUE CON-
hPa Del. quantity	: 174.0	

CONTROL LEVER
control lever position degree : 104.0 tolerance degree : +- 4.0
RATED SPEED rack travel mm : 12.60 Rated speed rpm : 1175 Tolerance 1/min : +- 5
rack travel mm : 4.00 Rated speed rpm : 1265 Tolerance 1/min : +- 15
rack travel mm : 0.85 Tolerance mm : +- 0.55 Rated speed rpm : 1400
rack travel mm : 4.00 Rated speed rpm : 1270 Tolerance 1/min : +- 15
LOW IDLE
control lever
position degree : 80.0 tolerance degree : +- 4.0
position degree : 80.0 tolerance degree : +- 4.0 Setting point w/out bumper spring
tolerance degree : +- 4.0
tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.40
tolerance degree : +- 4.0  Setting point w/out bumper spring  Rated speed rpm : 400  rack travel mm : 4.40  Tolerance mm : +- 0.10
tolerance degree : +- 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.40 Tolerance mm : +- 0.10  Testing:  Rated speed rpm : 400 rack travel mm : 4.90
tolerance degree : +- 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.40 Tolerance mm : +- 0.10  Testing:  Rated speed rpm : 400 rack travel mm : 4.90 Tolerance mm : +- 0.10  rack travel mm : 2.00 Rated speed rpm : 500

		+ Rated speed rpm	: 700
Rated speed rpm	: 700	+ rack travel mm	
rack travel mm		Tolerance mm	: + 0.10
Tolerance mm	: +- 0.10	+ Del. quantity	0.10
interacte in	. +- 0.10	- cm3/1000 strokes	: 187.0
Dated aread arm	. 700	+ Tolerance	. 167.0
Rated speed rpm	: 700		7.0
rack travel mm	: 8.10	+ cm3/1000 strokes	3.0
Tolerance mm	: <b>←</b> 0.10	+ Check tolerance	
	4005	+ cm3/1000s.	: +- 6.0
Rated speed rpm	: 1025	†	
rack travel mm		<u> </u>	
Tolerance mm	: +- 0.10	+ Aneroid pressure	•
		+ hPa	:
	<del></del>		: 700
ANEROID/ALTITUDE		+ Del. quantity	
COMPENSATOR TEST		+ cm3/1000 strokes	: 70.0
		+ Tolerance	
		+ cm3/1000 strokes	: +- 2.0
SETTING		+ Check tolerance	
		→ cm3/1000s.	: +- 4.0
Rated speed rpm	: 500	+ Spreed	
Pressure hPa	: 1500	+ Tolerance	
rack travel mm	: 14.10	cm3/1000 strokes	: 5.0
Tolerance mm		+ Check tolerance	
		+ cm3/1000s.	: 9.0
Rated speed rpm	: 500		
Pressure hPa			
rack travel mm	: – : 9.45	Aneroid pressure	
Tolerance mm	: +- 0.15	+ hPa	• -
TOCCY GIVE WAN		Rated speed rpm	· : 500
MEASUREMENT		+ Del. quantity	. 500
PIEASOREMEIT		cm3/1000 strokes	: 91.0
Rated speed rpm	, 500	Tolerance	. 71.0
kated speed rpiii	. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	cm3/1000 strokes	10
D +D-	. 450	· · · · · · · · · · · · · · · · · · ·	: +- 1.0
Pressure hPa	: 150 : 9.75	+ Check tolerance	
rack travel mm	: 9.75	cm3/1000s.	: +- 4.0
Tolerance mm	: <b>←</b> 0.05	†	
	200	†	
Pressure hPa		07117110 5151 15	. T. I.D.
rack travel mm		+ STARTING FUEL DE	LIVERY
Tolerance mm	: <b>←</b> 0.15	<b>†</b>	100
		+ Rated speed rpm	: 100
		+ rack travel mm	
<del></del>	<del></del>	Tolerance mm	: <b>←</b> 0.45
FUEL DELIVERY CHA	ARACTERISTICS	+ Del. quantity	
		+ cm3/1000 strokes	: 112.0
<del></del>		+ Tolerance	
Aneroid pressure		+ cm3/1000 strokes	: +- 10.0
hPa	: 1500	+ Check tolerance	
Rated speed rpm	: 1125	+ cm3/1000s.	: +- 14.0
Del. quantity		+	
cm3/1000 strokes	: 161.0	+	
Tolerance		+	
cm3/1000 strokes	: <del>←</del> 3.0	+	<del></del>
Check tolerance		+ LOW IDLE	
cm3/1000s.	: +- 6.0	+	
		+ Rated speed rpm	: 400
<del></del>		+	
Aneroid pressure		+ Rack travel in m	m: 4.90
hPa	: 1500	+ Tolerance mm	
rir <b>G</b>	. 1000	T TOTAL MINI	0.10

Del. quantity cm3/1000 strokes : 25.0

Tolerance cm3/1000 strokes : +- Check tolerance cm3/1000s. : +-3.0

; +<del>-</del> 6.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 27, 10, 98 : ISO 4113

Combination No. : 0 402 086 705

Injection pump

Pump designation : PES6P100B321RS3388 EP type number : 0 412 006 714

Governor

Governer design. : RSV400...1125P0A698

Governer no. : 0 421 833 624

Cust. part No. : 51.11103-7606

Customer-spec. information

Customer : MAN
Motor : D0826 LE527
Power KW : 169.0

#### TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

: 40 temp. °C Tolerance °C : +- 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0Tolerance bar : + 0.1

Overflow quantity

min. l/h : 150
Tolerance l/h : +- 20.0

Test nozzle holde

: 1 688 901 101 assembly

Opening pressure

: 208.5 Tolerance bar : + 1.5 Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0

x length mm : 600

### REMARKS

# (A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Check

tolerance mm : +- 0.10

Rack travel in mm : 13.50 Tolerance mm : +- 0.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance :  $\leftarrow$  0.50

Check

tolerance "NW :  $\leftarrow$  0.75

Start of delivery blocking

Tolerance : +- 0.10

Check

: **←** 0.75 tolerance °NW

Barrel no. : 1

### BASIC SETTING

Rated speed rpm : 925

Dook Angual in ma 4 17 80	
Rack travel in mm : 13.80 + Tolerance mm : + 0.05 +	CONTROL LEVER
Del. quantity cm3/1000 strokes : 166.0	control lever position degree : 101.0 tolerance degree : +- 4.0
Tolerance + 1.0	RATED SPEED : 12.10
Check tolerance cm3/1000s. : +- 4.0	Rated speed rpm : 1175 Tolerance 1/min : +- 5
	rack travel mm : 4.00 Rated speed rpm : 1260
Rated speed rpm : 400	Tolerance 1/min : +- 15
Rack travel in mm : 4.80  Tolerance mm : + 0.10  Del. quantity  cm3/1000 strokes : 25.0	rack travel mm : 0.85 Tolerance mm : +- 0.55 Rated speed rpm : 1400
Tolerance cm3/1000 strokes : + 3.0 + 6.0 + 6.0	rack travel mm : 4.00 Rated speed rpm : 1263 Tolerance 1/min : +- 15
(B) SETTING OF INJECTION PUMP	
WITH GOVERNOR +	LOW IDLE
GUIDE SLEEVE POSITION	control lever position degree : 77.0
control lever	
<del>}</del>	position degree : 77.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400
control lever + position degree : - 3	position degree : 77.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.30  Tolerance mm : + 0.10
control lever position degree : -3 Rated speed rpm : 800  Rack travel in mm : 0.50	position degree : 77.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.30
control lever position degree : -3 Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20	position degree : 77.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.30  Tolerance mm : + 0.10
control lever position degree : -3 Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20  governor spring pre-tension	position degree : 77.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.30 Tolerance mm : + 0.10  Testing:  Rated speed rpm : 400 rack travel mm : 4.80 Tolerance mm : + 0.10  rack travel mm : 2.00
control lever position degree : - 3 Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20  governor spring pre-tension click setting x : 5.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 925 Aneroid pressure	position degree : 77.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.30 Tolerance mm : + 0.10  Testing:  Rated speed rpm : 400 rack travel mm : 4.80 Tolerance mm : + 0.10
control lever position degree : - 3 Rated speed rpm : 800  Rack travel in mm : 0.50 Tolerance mm : + 0.20  governor spring pre-tension click setting x : 5.00  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 925	position degree : 77.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 400 rack travel mm : 4.30 Tolerance mm : + 0.10  Testing:  Rated speed rpm : 400 rack travel mm : 4.80 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 500

		+ Rated speed rpm : 700
Rated speed rpm		rack travel mm : 13.80
rack travel mm	: 13.80	├ Tolerance mm : ← 0.10
Tolerance mm	: +- 0.10	+ Del. quantity
		+ cm3/1000 strokes : 179.0
Rated speed rpm	: 700	+ Tolerance
rack travel mm	: 8.10	+ cm3/1000 strokes : +- 3.0
Tolerance mm	: <b>←</b> 0.10	+ Check tolerance
		+ cm3/1000s. : +- 6.0
Rated speed rpm rack travel mm Tolerance mm	: 1000	1
rack travel mm	: 13.70	
Tolerance mm	: +- 0.10	Aneroid pressure
		+ hPa : -
		Rated speed rpm : 700
ANEROID/ALTITUDE		Del. quantity
COMPENSATOR TEST		cm3/1000 strokes : 70.0
CONFERINGATION TEST		Tolerance
		cm3/1000 strokes : +- 2.0
SETTING		Check tolerance
SETTING		cm3/1000s. : +- 4.0
Rated speed rpm	. 500	Spreed
Pressure hPa	: 1500	Tolerance
nock though mm	: 13.80	cm3/1000 strokes : 5.0
rack travel mm Tolerance mm	: +- 0.10	Check tolerance
roterance im	. += 0.10	- cm3/1000s. : 9.0
Dated aread app	. 500	T 01137 10003. : 9.0
Rated speed rpm		Ť
Pressure hPa		Ananaid massume
rack travel mm		+ Aneroid pressure
Tolerance mm	: +- 0.20	+ hPa : - + Rated speed rpm : 500
MEACUDEMENT		· · · · · · · · · · · · · · · · · · ·
MEASUREMENT		+ Del. quantity
<b>5</b> • • • • • • • • • • • • • • • • • • •	500	+ cm3/1000 strokes : 93.0
Rated speed rpm	: 500	† Tolerance
	450	+ cm3/1000 strokes : + 1.0
Pressure hPa		+ Check tolerance
rack travel mm		+ cm3/1000s. : $+$ 4.0
Tolerance mm	: <del>+-</del> 0.05	†
	000	†
Pressure hPa		
rack travel mm		+ STARTING FUEL DELIVERY
Tolerance mm	: <del>←</del> 0.15	†
		+ Rated speed rpm : 100
		rack travel mm : 9.50
		Tolerance mm : + 0.20
FUEL DELIVERY CHA	ARACTERISTICS	+ Del. quantity
		+ cm3/1000 strokes : 112.0
		+ Tolerance
Aneroid pressure	4500	+ cm3/1000 strokes : + 10.0
hPa	: 1500	+ Check tolerance
Rated speed rpm	: 1125	+ cm3/1000s. : $+$ 14.0
Del. quantity		†
cm3/1000 strokes	: 146.5	†
Tolerance		†
cm3/1000 strokes	: +- 3.0	100.70:5
Check tolerance		+ LOW IDLE
cm3/1000s.	: <del></del> 6.0	†
		+ Rated speed rpm : 400
	···	†
Aneroid pressure		+ Rack travel in mm : 4.80
hPa	: 1500	+ Tolerance mm : +- 0.10

Del. quantity cm3/1000 strokes : 25.0 Tolerance cm3/1000 strokes : +-3.0

Check tolerance cm3/1000s. : +- 6.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 23.10.98 Test oil : ISO 4113

Combination No. : 0 402 616 803

Injection pump

Pump designation : PE6P130A300RS7274 EP type number : 0 412 636 824

Governor

Governer design. :
Governer no. :

Cust. part No. : 866146-P03 v. 10.94

Customer-spec. information

Customer : PENTA

Motor : TAD1230G(GENSET)

#### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Vibration damper

(RoBo diaphragm) : 4.2

Test oil inlet

temp. °C : 40Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Tolerance l/h: +- 20.0

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

bar : 208.5 Tolerance bar : + 1.5 Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0

x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 4.05
Tolerance mm : + 0.05
Check

tolerance mm : +- 0.10

Rack travel in mm : 12.90Tolerance mm : + 0.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance : +- 0.50 Check

THECK

tolerance °NW : + 0.75

Barrel no. : 1

# BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 12.90

Tolerance mm	: +- 0.10
Del. quantity cm3/1000 strokes	: 400.0
Tolerance cm3/1000 strokes	: +- 1.5
Check tolerance cm3/1000s.	: +- 5.0
Spreed	
Tolerance cm3/1000 strokes	: 8.0
Check tolerance cm3/1000S.	: 12.0
Rated speed rpm	: 300
Rack travel in mm Tolerance mm	: 4.00 : +- 0.30
Del. quantity cm3/1000 strokes	: 23.0
Tolerance cm3/1000 strokes	: +- 3.0
Check tolerance cm3/1000s.	: +- 6.0
Spreed Tolerance	
cm3/1000 strokes Check tolerance	: 5.0
cm3/1000s.	: 8.0
(B) SETTING OF INJ WITH GOVERNOR	JECTION PUMP
FULL LOAD DELIVERY	AT FULL LOAD STOP
Rated speed rpm	: 700
Aneroid pressure hPa	: -
Del. quantity cm3/1000 strokes	: 400.0
Tolerance cm3/1000 strokes	: <del></del> 1.5
Check tolerance cm3/1000s.	: <del>+</del> 5.0
Spreed	
Tolerance cm3/1000 strokes	: 8.0
Check tolerance cm3/1000s.	: 12.0

Testing:				
Rated speed rpm rack travel mm Tolerance mm	: :		300 4.00 0.30	
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	:		700 12.90 0.10	
LOW IDLE				
	:		300	
Rated speed rpm Rack travel in mm Tolerance mm		+-	300 4.00 0.30	
Rated speed rpm Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes	:	+	4.00	
Rated speed rpm Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	:	+-	4.00 0.30	
Rated speed rpm  Rack travel in mm  Tolerance mm  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000S.  Spreed	:	+++	4.00 0.30 23.0	
Rated speed rpm Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance	: :	+-	4.00 0.30 23.0 3.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 23.10.98 : ISO 4113

Combination No. : 0 402 619 801

Injection pump

Pump designation : PE10P120A500LS7934

EP type number : 0 412 629 814

Governor

Governer design. :

Governer no.

Cust. part No. : 51.11103-7420

Customer-spec. information

Customer : MAN

Motor

: D2840LE\*

Power KW

: 515.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

temp. °C

40

Tolerance °C

: **←** 2.0

Overflow valve : 1 417 413 047

Inlet press. bar :

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

: 208.5

Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x Length mm : REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant. per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm

4.55

Tolerance mm

: +- 0.05

Check

: +- 0.10tolerance mm

: 10-9-4-1-8 Firing order

: - 7- 6- 3- 5 : - 2

: 0-45-72-117-144 Phasing

: -189-216-261-288

: -333

Start of delivery mark

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : **←** 0.75

Barrel no.

: 10

BASIC SETTING

Rated speed rpm : 700

Rack travel in mm : 12.60

Tolerance mm : +- 0.05

Del. quantity

cm3/1000 strokes : 340.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  1.0

C23

Check tolerance cm3/1000s.	: +- 4.0
Spreed	
Tolerance cm3/1000 strokes	: 5.0
Check tolerance cm3/1000s.	: 9.0
Rated speed rpm	: 300
Rack travel in mm	: 7.00
Tolerance mm	: - 0.10
Del. quantity cm3/1000 strokes	: 115.0
CM3/1000 strokes Tolerance	. 113.0
cm3/1000 strokes	: <del>+-</del> 3.0
Check tolerance cm3/1000s. Spreed	: +- 6.0
Tolerance	
cm3/1000 strokes Check tolerance	: 14.0
cm3/1000s.	: 19.0
WITH GOVERNOR	
Rated speed rpm	JECTION PUMP
WITH GOVERNOR  FULL LOAD DELIVER  Rated speed rpm  Aneroid pressure	JECTION PUMP  Y AT FULL LOAD STOP
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity	JECTION PUMP  Y AT FULL LOAD STOP  : 700  : -
WITH GOVERNOR  FULL LOAD DELIVER  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes	JECTION PUMP  Y AT FULL LOAD STOP  : 700  : -
WITH GOVERNOR  FULL LOAD DELIVER	JECTION PUMP  Y AT FULL LOAD STOP  : 700  : -
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance	Y AT FULL LOAD STOP  : 700  : -  : 340.0  : +- 1.0
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000s.	Y AT FULL LOAD STOP  : 700  : -  : 340.0
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000s.  Spreed  Tolerance	Y AT FULL LOAD STOP : 700 : - : 340.0 : +- 1.0 : +- 4.0
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000strokes  Check tolerance  cm3/1000s.  Spreed  Tolerance  cm3/1000strokes	Y AT FULL LOAD STOP  : 700  : -  : 340.0  : +- 1.0
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000s.  Spreed  Tolerance	Y AT FULL LOAD STOP : 700 : - : 340.0 : +- 1.0 : +- 4.0
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000s  Spreed  Tolerance  cm3/1000s  Spreed  Tolerance  cm3/1000strokes  Check tolerance  cm3/1000s	Y AT FULL LOAD STOP  : 700  : - : 340.0 : +- 1.0 : +- 4.0 : 5.0
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000s  Spreed  Tolerance  cm3/1000s  Spreed  Tolerance  cm3/1000strokes  Check tolerance  cm3/1000s	Y AT FULL LOAD STOP  : 700  : - : 340.0 : +- 1.0 : +- 4.0 : 5.0
WITH GOVERNOR  FULL LOAD DELIVERY Rated speed rpm Aneroid pressure hPa Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000s. Spreed Tolerance cm3/1000s. Check tolerance cm3/1000s.	Y AT FULL LOAD STOP  : 700  : - : 340.0 : +- 1.0 : +- 4.0 : 5.0
WITH GOVERNOR  FULL LOAD DELIVERY  Rated speed rpm  Aneroid pressure  hPa  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000s.  Spreed  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000s.	Y AT FULL LOAD STOP : 700 : - : 340.0 : +- 1.0 : +- 4.0 : 5.0

Tolerance mm	:	+	0.10	
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	:	+-	700 12.60 0.05	
LOW IDLE			· · · · · · · · · · · · · · · · · · ·	
Rated speed rpm	:		300	
Rack travel in mm Tolerance mm	:		7.00	
	•	+-	0.10	
Del. quantity cm3/1000 strokes	:	+-	0.10 115.0	
Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	:	+-		
Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	:	+-	115.0	
Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	:	+-	115.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 22.10.98 Test oil : 22.70.98

Combination No. : 0 402 646 658

Injection pump

Pump designation : PE6P130A720RS7371 EP type number : 0 412 636 837

Governor

Governer design. : RQV250...900PA1215 Governer no. : 0 421 814 139

Cust. part No. : 3825482-P05 V.05.98

Customer-spec. information

Customer : PENTA

Motor

: TAMD 163 A

Power KW

: 405.0

#### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Vibration

damper

(RoBo diaphragm) : 3.1

Test oil inlet

temp. °C : 40 Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 1.5

Tolerance bar : + 0.1

Overflow quantity Overflow quantity
min. l/h : 60
Tolerance l/h : +- 10.0

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

bar

: 208.5 Tolerance bar : +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter :

x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0

Tolerance bar : +- 1.0

Prestroke mm : 3.70
Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm : 7.60

Tolerance mm : +- 0.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance : **←** 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance

: +- 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

		† guide sleeve
Rated speed rpm	: 900	travel mm : 1.98 Tolerance mm : + 0.25
Rack travel in mm		Rated speed rpm : 365
Tolerance mm	: +- 0.05	guide sleeve travel mm : 2.47
Del. quantity cm3/1000 strokes	: 377.0	Tolerance mm : + 0.25
Tolerance cm3/1000 strokes	: +- 1.5	Rated speed rpm : 650  guide sleeve  travel mm : 4.40  Tolerance mm : +- 0.25
Check tolerance cm3/1000s.	: <del>+-</del> 5.0	+ Rated speed rpm : 1160
Spreed		guide sleeve travel mm : 11.50 Tolerance mm : + 0.50
Tolerance cm3/1000 strokes	: 9.0	+
Check tolerance	42.0	+ GUIDE SLEEVE POSITION
cm3/1000s.	: 12.0	+ control lever + position degree : - 1
Rated speed rpm	: 250	Rated speed rpm : 1030
Rack travel in mm Tolerance mm		Rack travel in mm : 11.00 Tolerance mm : + 2.00
Del. quantity cm3/1000 strokes Tolerance	: 25.0	FULL LOAD DELIVERY AT FULL LOAD STOP
cm3/1000 strokes Check tolerance	: +- 3.0	Rated speed rpm : 900 Aneroid pressure
cm3/1000s. Spreed	: <del>-</del> 6.0	+ hPa : 1500 + Del. quantity
Tolerance cm3/1000 strokes		cm3/1000 strokes : 377.0 Tolerance
Check tolerance cm3/1000s.	: 8.0	+ cm3/1000 strokes : + 1.5 + Check tolerance + cm3/1000S. : + 5.0
(B) SETTING OF IN	JECTION PUMP	+ Spreed + Tolerance
WITH GOVERNOR		cm3/1000 strokes : 9.0 Check tolerance
GUIDE SLEEVE TRAVE		cm3/1000s. : 12.0
Rated speed rpm guide sleeve	: 959	CONTROL LEVER
travel mm Tolerance mm	: 8.22	control lever
rocci giree imi	: + 0.25	· ·
Rated speed rpm		position degree : 63.0 tolerance degree : +- 4.0
Rated speed rpm guide sleeve travel mm	: 250 : 1.12	tolerance degree : +- 4.0 control lever
Rated speed rpm guide sleeve	: 250 : 1.12 : + 0.25	tolerance degree : +- 4.0

		+	Pressure hPa
RATED SPEED rack travel mm Rated speed rpm	: 12.20 : 930	+	rack travel m Tolerance mm
Tolerance 1/min			Rated speed r
rack travel mm Rated speed rpm Tolerance 1/min	: 4.00 : 1020	+	Fressure hPa rack travel m Tolerance mm
		Ŧ	MEASUREMENT
rack travel mm Tolerance mm Rated speed rpm		Ī	Rated speed r
, and a company of the company	, ,,,,,,	+	Pressure hPa rack travel m Tolerance mm
LOW IDLE		+	Pressure hPa rack travel m Tolerance mm
control lever	. 49.0	+	
position degree tolerance degree	: 08.0 : +- 4.0	Į.	<del></del>
control lever		+	FUEL DELIVERY
position degree	: 15.0	I	<del></del>
tolerance degree	: + 4.0		Aneroid press
Setting point w/o	ut bumper spring	+	hPa Rated speed r Del. quantity
Rated speed rpm	: 150	+	cm3/1000 stró Tolerance
CRT mm min.	: > 6.50	1	cm3/1000 stro Check toleran
Testing:		+	cm3/1000s.
Rated speed rpm		Ŧ	
rack travel mm			Aneroid press
Tolerance mm		•	hPa Rated speed r
Rated speed rpm	: 350	† ¦	Del. quantity cm3/1000 stro
TORQUE CONTROL			Tolerance cm3/1000 stro
Rated speed rpm	: 900		Check toleran
rack travel mm Tolerance mm	: 13.20 · +- 0.05	İ '	cm3/1000s.
		+	
Rated speed rpm	: 700	†	
rack travel mm Tolerance mm	: 13.20 : +- 0.10	1	
	. 3,10	+ -	
ANEROID/ALTITUDE		— <u>†</u> '	LOW IDLE
COMPENSATOR TEST		<u> </u>	Rated speed r
SETTING			Rack travel in Tolerance mm
		+ 1	Del. quantity
Rated speed rpm	: 500	+ (	cm3/1000 stro

Pressure hPa rack travel mm Tolerance mm	: 1500 : 13.20 : +- 0.05
Rated speed rpm Fressure hPa rack travel mm Tolerance mm	: 500 : - : 7.60 : +- 0.20
MEASUREMENT	
Rated speed rpm	: 500
Pressure hPa rack travel mm Tolerance mm	: 910 : 5.20 : +- 0.30
Pressure hPa rack travel mm Tolerance mm	: 190 : 0.25 : ← 0.05
FUEL DELIVERY CHA	RACTERISTICS
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000s.  Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 406.0
LOW IDLE	
Rated speed rpm	: 250
Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes	: +- 0.10

Tolerance cm3/1000 strokes	: +-	3.0
Check tolerance cm3/1000s.	: +-	6.0
Spreed Tolerance cm3/1000 strokes	•	5.0
Check tolerance cm3/1000s.	:	8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 22.10.98 Test oil : ISO 4113

Combination No. : 0 402 646 762

Injection pump

Pump designation : PE6P120A320LS7834

: -10

EP type number : 0 412 626 853

Governor

Governer design. : RQV300...1050PA1033

: -18

Governer no. : 0 421 814 136

Cust. part No. : 0260743602

Customer—spec. information
Customer : MB—NFZ
Motor : OM401 LA
Power KW : 230.0

# TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C : 40 Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Tolerance l/h:  $\leftarrow$  10.0

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

bar : 208.5 Tolerance bar : + 1.5 Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter: 3.0

x Length mm : 1000

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 5.25
Tolerance mm : + 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 20.50Tolerance mm : +0.50

Firing order : 6-3-5-2-4-

: 1-

Phasing : 0-60-120-180-240

: −300−360 Tolerance : + 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 6

# BASIC SETTING

Rated speed rpm : 550

Rack travel in mm : 14.80 Tolerance mm : + 0.05

	+ guide sleeve
Dal grantity	
Del. quantity cm3/1000 strokes : 230.0	travel mm : 5.03 Tolerance mm : +- 0.25
Tolerance	+ Rated speed rpm : 820
cm3/1000 strokes : $+-$ 1.0	+ guide sleeve
	+ travel mm : 6.13
Check tolerance	+ Tolerance mm : + 0.25
cm3/1000s. : +- 4.0	+
	+ Rated speed rpm : 1183
Spreed	+ guide sleeve
·	† travel mm : 10.00
Tolerance	+ Tolerance mm : +- 0.25
cm3/100% strokes : 5.0	+
	+ Rated speed rpm : 1280
Check tolerance	guide sleeve
cm3/1000s. : 9.0	+ travel mm : 11.50
	+ Tolerance mm : + 0.50
Rated speed rpm : 300	↓ GUIDE SLEEVE POSITION
Nation option ( )	00200 002000 00212011
Rack travel in mm: 5.20	1
Tolerance mm : +- 0.10	control lever
Del. quantity	position degree : - 1
cm3/1000 strokes : 13.0	Rated speed rpm : 1145
Tolerance	T Rated speed (pill : 1143
cm3/1000 strokes : +- 3.0	Rack travel in mm: 13.80
	+ Tolerance mm : +- 1.30
Check tolerance cm3/1000s. : +- 6.0	Toterance initi : +- 1.50
	T
Spreed	FULL LOAD DELTHEDY AT FULL LOAD STOD
Tolerance	+ FULL LOAD DELIVERY AT FULL LOAD STOP
cm3/1000 strokes : 6.0	Detect and any property
Check tolerance	+ Rated speed rpm : 550
cm3/1000s. : 10.0	+ Aneroid pressure
	+ hPa : 1000
4-1	+ Del. quantity
(B) SETTING OF INJECTION PUMP	+ cm3/1000 strokes : 230.0
WITH GOVERNOR	+ Tolerance
	+ cm3/1000 strokes : + 1.0
	- + Check tolerance
GUIDE SLEEVE TRAVEL	+ cm3/1000s. : $+$ 4.0
A	+ Spreed
Rated speed rpm : 1108	+ Tolerance
guide sleeve	+ cm3/1000 strokes : 5.0
travel mm : 8.53	+ Check tolerance
Tolerance mm : +- 0.15	+ cm3/1000s. : 9.0
	†
Rated speed rpm : 300	+
guide sleeve	+
travel mm : 1.29	+ CONTROL LEVER
Tolerance mm : + 0.20	+
	+ control lever
Rated speed rpm : 558	position degree : 121.0
guide sleeve	tolerance degree : + 4.0
travel mm : 4.53	+
Tolerance mm : +- 0.25	+ RATED SPEED
	+ rack travel mm : 13.80
Rated speed rpm : 608	+ Rated speed rpm : 1095
• ,	Tolerance 1/min : +- 5
	•

rack travel mm Rated speed rpm Tolerance 1/min rack travel mm Tolerance mm Rated speed rpm	: 1195 : ← 15 : 0.75	Pressure hPa rack travel mm Tolerance mm  MEASUREMENT Rated speed rpm  Pressure hPa rack travel mm Tolerance mm	: 10.50 : + 0.15 : 400 : 400 : 12.90
LOW IDLE		Pressure hPa rack travel mm Tolerance mm	: 14.15
position degree tolerance degree	: 66.0 : ← 4.0	Start interlock	
Setting point w/o		Rated speed rpm Rated speed rpm	: > 140 : < 220
Rated speed rpm CRT mm min.		Check speed 1/min Check	: > 120
Testing:		speed 1/min	: < 240
Rated speed rpm rack travel mm Tolerance mm	: 5.20	FUEL DELIVERY CHA	RACTERISTICS
		<del></del>	
Rated speed rpm	: 350	Aneroid pressure hPa Rated speed rpm	: 1000
TORQUE CONTROL Rated speed rpm rack travel mm	: 550 : 14.80	hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance	: 1000 : 1050 : 226.5
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm Rated speed rpm	: 550 : 14.80 : + 0.05 : 1050	hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 1000 : 1050 : 226.5 : + 3.0
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm Rated speed rpm rack travel mm Tolerance mm	: 550 : 14.80 : + 0.05 : 1050 : 14.80 : + 0.10	hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes	: 1000 : 1050 : 226.5 : + 3.0 : + 6.0
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm Rated speed rpm rack travel mm	: 550 : 14.80 : + 0.05 : 1050 : 14.80 : + 0.10	hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance	: 1000 : 1050 : 226.5 : + 3.0 : + 6.0
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm Rated speed rpm rack travel mm Tolerance mm	: 550 : 14.80 : ← 0.05 : 1050 : 14.80 : ← 0.10 : 700 : 14.80 : ← 0.05	hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance	: 1000 : 1050 : 226.5 : + 3.0 : + 6.0 : 8.0 : 12.0
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm  Rated speed rpm rack travel mm Tolerance mm  Rated speed rpm rack travel mm Tolerance mm  ANEROID/ALTITUDE COMPENSATOR TEST	: 550 : 14.80 : + 0.05 : 1050 : 14.80 : + 0.10 : 700 : 14.80 : + 0.05	hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  rack travel mm Tolerance mm  Aneroid pressure hPa Rated speed rpm	: 1000 : 1050 : 226.5 : + 3.0 : + 6.0 : 8.0 : 12.0 : 14.80 : + 0.05
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm  Rated speed rpm rack travel mm Tolerance mm  Rated speed rpm rack travel mm Tolerance mm  ANEROID/ALTITUDE COMPENSATOR TEST	: 550 : 14.80 : + 0.05 : 1050 : 14.80 : + 0.10 : 700 : 14.80 : + 0.05 : 400 : 1000 : 14.80	hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 1000 : 1050 : 226.5 : + 3.0 : + 6.0 : 8.0 : 12.0 : 14.80 : + 0.05

Spreed

Tolerance

cm3/1000 strokes : 8.0

Check tolerance

cm3/1000s.

12.0

# STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity cm3/1000 strokes : 210.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  15.0

Check tolerance

cm3/1000s.

: +- 19.0

# LOW IDLE

Rated speed rpm :

300

Rack travel in mm :

5.20

Tolerance mm : + 0.10

Del. quantity cm3/1000 strokes : 13.0

Tolerance

cm3/1000 strokes : +- 3.0

6.0

Check tolerance cm3/1000s.

Spreed

Tolerance

cm3/1000 strokes :

Check tolerance

6.0 10.0

cm3/1000s.

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 22.10.98 Edition : ISO 4113 Test oil

Combination No. : 0 402 648 932

Injection pump

Pump designation : PE8P120A320LS7849 EP type number : 0 412 628 864

Governor

Governer design. : RQV300...1050PA1034 Governer no. : 0 421 813 993

Cust. part No. :

Customer-spec. information Customer : LIEBHERR Motor : D 9308 TI Power KW : 360.0

# TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

40 temp. °C Tolerance °C : +- 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

208.5 bar Tolerance bar

Test Lines : 1 680 750 075

Outside diameter : 8.0 x inside diameter: 2.5 x Length mm : 1000

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm 4.55 : +- 0.05 Tolerance mm

Check

tolerance mm : **←** 0.10

Rack travel in mm: 10.50 Tolerance mm : +- 1.50

Firing order : 1-8-7-2-6 : - 3- 5- 4

: 0-45-90-135-180 Phasing : -225-270-315

Tolerance : **←** 0.50

Check

tolerance °NW : +- 0.75

# BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 15.05 Tolerance mm : +- 0.05

Del. quantity cm3/1000 strokes : 263.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

: +- 4.0 cm3/1000S.

Spreed

Tolerance cm3/1000 strokes	: 5.0	control lever position degree : - 1
Check tolerance cm3/1000S.	: 9.0	Rated speed rpm : 1185
		Rack travel in mm : 14.00 Tolerance mm : +- 1.30
Rated speed rpm	: 350	5,11,1,000,051,71,500,050
Dook though in m	m · 5 70	FULL LOAD DELIVERY AT FULL LOAD STOP
Rack travel in m Tolerance mm		Rated speed rpm : 1050
Del. quantity	31.3	+ Aneroid pressure
cm3/1000 strokes	: 21.0	+ hPa : 1500
Tolerance		+ Del. quantity
cm3/1000 strokes	: +- 3.0	+ cm3/1000 strokes : 263.0
Check tolerance cm3/1000s.	: +- 6.0	+ Tolerance + cm3/1000 strokes : ← 1.0
Spreed	. += 0.0	Check tolerance
Tolerance		+ cm3/1000s. : + 4.0
cm3/1000 strokes	: 6.0	+ Spreed
Check tolerance		+ Tolerance
cm3/1000s.	: 10.0	cm3/1000 strokes : 5.0
		+ Check tolerance + cm3/1000S. : 9.0
(B) SETTING OF IN WITH GOVERNOR	NJECTION PUMP	
CHINE OF COME TOWN		CONTROL LEVER
GUIDE SLEEVE TRAV	VEL.	t control lever
Rated speed rpm	: 780	position degree : 107.0
guide sleeve		tolerance degree : + 4.0
travel mm	: 6.60	+
Tolerance mm	: <b>←</b> 0.30	+ RATED SPEED
Rated speed rpm	: 350	+ rack travel mm : 14.00 + Rated speed rpm : 1105
guide sleeve	. 330	Tolerance 1/min : + 5
travel mm	: 1.90	+
Tolerance mm	: +- 0.20	rack travel mm : 4.00
<b>5</b> -4-1	4.05	+ Rated speed rpm : 1215
Rated speed rpm guide sleeve		Tolerance 1/min : +- 15
travel mm Tolerance mm	: 2.65	rack travel mm : 0.70
Tolerance mm	: <del>+-</del> 0.25	rack travel mm : 0.70 Tolerance mm : + 0.70 Rated speed rpm : 1300
		+ Rated speed rpm : 1300
Rated speed rpm	: 550	†
guide sleeve travel mm	: 4.40	I
Tolerance mm	: +- 0.20	
		LOW IDLE
Rated speed rpm	: 1118	+
guide sleeve travel mm	. 10 50	+ + control lever
Travel mm Tolerance mm	. 10.30 : +- 0.10	+ position degree : 72.0
. Ceer arree min	. 0.10	tolerance degree : +- 4.0
GUIDE SLEEVE POSI	TION	Setting point w/out bumper spring
		Rated speed rpm : 250

CRT mm min. :> 8.50Testing: 350 Rated speed rpm 5.30 rack travel mm Tolerance mm : + - 0.102.00 rack travel mm Rated speed rpm 460 30 Tolerance 1/min 385 Rated speed rpm TORQUE CONTROL 1050 Rated speed rpm : 15.05 rack travel mm : Tolerance mm : +- 0.05 ANEROID/ALTITUDE COMPENSATOR TEST **SETTING** 700 Rated speed rpm Pressure hPa : 1500 rack travel mm : 15.05 : <del>+-</del> 0.05 Tolerance mm Rated speed rpm 700 Pressure hPa 11.80 rack travel mm : + - 0.10Tolerance mm **MEASUREMENT** 700 Rated speed rpm 870 Pressure hPa 12.60 rack travel mm Tolerance mm : +- 0.10 1130 Pressure hPa 14.15 rack travel mm : + 0.05Tolerance mm FUEL DELIVERY CHARACTERISTICS Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0

#### STARTING FUEL DELIVERY

ESS test: With 24 V solenoid activated, rack must reach start position in max. control lever setting.

Rated speed rpm : 100
rack travel mm : 20.50
Tolerance mm : + 0.50
Del. quantity
cm3/1000 strokes : 165.0
Tolerance
cm3/1000 strokes : + 10.0
Check tolerance
cm3/1000s. : + 14.0

#### LOW IDLE

Rated speed rpm : 350 Rack travel in mm : Tolerance mm : +- 0.10 Del. quantity cm3/1000 strokes : 21.0 Tolerance cm3/1000 strokes : +- 3.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance cm3/1000s. : 10.0

End of test specification sheet

hPa

Aneroid pressure

Del. quantity

Rated speed rpm :

cm3/1000 strokes :

700

194.5

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 22.10.98 : ISO 4113

Combination No. : 0 402 676 841

Injection pump

Pump designation : PE6P120A320LS7928 EP type number : 0 412 626 977

Governor

Governer design. : RSV600...1050P0A696

Governer no. : 0 421 833 619

Cust. part No. : 0270744102

Customer-spec. information Customer : MB-NFZ Motor : OM 441 LA : 300.0 Power KW

# TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0 Tolerance bar : ← 0.1

Overflow quantity

min. L/h : 210 Tolerance L/h : +- 20.0

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

: 208.5 bar Tolerance bar : +- 1.5 Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0 x length mm : 1000

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar :  $\leftarrow$  1.0

Prestroke mm : 4.35 Tolerance mm : + 0.05 Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 20.50 Tolerance mm : + 0.50

Firing order : 6-3-5-2-4-

: 1

: 0-45-120-165-240 Phasing

: -285

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance :  $\leftarrow$  0.10

Check

tolerance  $^{\circ}NW$  : + 0.75

Barrel no. : 6

BASIC SETTING

Rated speed rpm : 1075

	+
Rack travel in mm : 14.70 Tolerance mm : + 0.05	FULL LOAD DELIVERY AT FULL LOAD STOP Rated speed rpm : 1075
Del. quantity cm3/1000 strokes : 275.0	Aneroid pressure + hPa : 1200
Tolerance cm3/1000 strokes : + 1.0	Del. quantity cm3/1000 strokes : 275.0 Tolerance
Check tolerance cm3/1000s. : +- 4.0	_ + cm3/1000 strokes : +- 1.0 + Check tolerance + cm3/1000s. : +- 4.0
Spreed	+ Spreed + Tolerance + cm3/1000 strokes : 6.0
Tolerance cm3/1000 strokes : 6.0	Check tolerance cm3/1000s. : 9.0
Check tolerance cm3/1000s. : 9.0	- T
Rated speed rpm : 600	<ul><li>control lever</li><li>position degree : 86.0</li><li>tolerance degree : +- 4.0</li></ul>
Rack travel in mm : 4.30 Tolerance mm : + 0.10 Del. quantity	+ RATED SPEED + rack travel mm : 13.70
cm3/1000 strokes : 17.0 Tolerance	Rated speed rpm : 1115 Tolerance 1/min : +- 5
cm3/1000 strokes : + 3.0 Check tolerance cm3/1000s. : + 6.0	+ Check + speed 1/min : ÷ 10
cm3/1000s. : +- 6.0 Spreed Tolerance	ASSEMBLY GOVERNOR SETTING
cm3/1000 strokes : 8.0 Check tolerance	Rated speed rpm : 1070 rack travel mm : 13.70
cm3/1000s. : 12.0	+ Rated speed rpm : 1102 + Tolerance 1/min : + 4
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	rack travel mm : 4.00
	rack travel mm : 0.85 Tolerance mm : + 0.55 Rated speed rpm : 1300
GUIDE SLEEVE POSITION	+ + +
control lever	Rated speed rpm : 1071 rack travel mm : 13.70
position degree : - 3 Rated speed rpm : 800	Rated speed rpm : 1103 Tolerance 1/min : +- 4
Rack travel in mm : 0.50 Tolerance mm : +- 0.20	rack travel mm : 4.00
governor spring pre-tension	rack travel mm : 0.85 Tolerance mm : + 0.55 Rated speed rpm : 1300
click setting x : 1.50	‡

Rated speed rpm rack travel mm	: 1072 : 13.70	Rated spee	d rpm : 100
Rated speed rpm Tolerance 1/min rack travel mm	: 1104 : +- 4	+	. : > 19.50
rack travel mm	: 4.00	+ Testing:	
rack travel mm	: 0.85	Rated spee	d rpm : 600
Tolerance mm Rated speed rpm	: 1300	Tolerance	l mm : 4.30 mm : +- 0.10
Dakad an and man	4077	rack trave	lmm: 2.00 drpm: 655 1/min:+- 30
Rated speed rpm rack travel mm	: 13.70	+ Tolerance	1/min : + 30
Rated speed rpm	: 1105	TODOUS CONT	TD01
Tolerance 1/min rack travel mm	: <del>+-</del> 4 : 4.00	+ TORQUE CON + Rated spee	drpm : 1075
rack travel mm	· 0.85	+ rack trave	drpm : 1075 Lmm : 14.70 mm : + 0.05
rack travel mm Tolerance mm Rated speed rpm	: + 0.55	+	
Rated speed rpm	: 1300	+ Rated speed	drpm : 800 Lmin : 15.60 nm :+ 0.10
Rated speed rom	• 1074	† Tolerance i	nm : +- 0.10
Rated speed rpm rack travel mm	: 13.70	Rated spee	d rpm : 1000
Rated speed rpm	: 1106	+ rack trave + Tolerance i	drpm : 1000 Lmm : 15.00 mm :+- 0.10
Tolerance 1/min rack travel mm		- ∔	
		rack trave	drpm : 800 Lmm : 16.00 nm :+- 0.10
rack travel mm Tolerance mm Rated speed rpm	: 0.85 : +- 0.55	† Toterance i	nm : +- U.1U
Rated speed rpm	: 1300	ANEROID/AL	
Rated speed rpm	: 1075	+ COMPENSATO	K IESI
Rated speed rpm rack travel mm	: 13.70	SETTING	
Rated speed rpm	: 1107	+	
Tolerance 1/min rack travel mm	: +- 4 : 4.00	+ Rated speed + Pressure h	
rack travel mm	: 0.85	rack travel	. mm : 15.60
Tolerance mm	: +- 0.55	+	
Rated speed rpm	: 1300	+ Rated speed + Pressure h	
LOW IDLE		rack travel	.mm: 9.80
LOW IDLE		MEASUREMENT	
control lever	(6.2	+	
position degree tolerance degree		Rated speed	
Setting point w/c	out bumper spring	Pressure h	. mm : 13.80
Rated speed rpm	: 600	+ Tolerance n	
rack travel mm Tolerance mm	: 2.00 : +- 0.10	+ Pressure h + rack travel	

Tolerance mm :  $\leftarrow$  0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

1200 hPa 800 Rated speed rpm

Del. quantity

cm3/1000 strokes : 319.0

Tolerance

cm3/1000 strokes : +- 3.0

Check tolerance

cm3/1000s. : <del>←</del> 6.0

rack travel mm : 15.00 Tolerance mm : +- 0.10

Aneroid pressure

hPa 500 Rated speed rpm Del. quantity

cm3/1000 strokes : 155.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

cm3/1000s. : +- 4.0

#### STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity

cm3/1000 strokes : 320.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  15.0

Check tolerance

: +- 19.0 cm3/1000S.

# LOW IDLE

Rated speed rpm : 600

Rack travel in mm: 4.30 Tolerance mm : +- 0.10 Del. quantity

cm3/1000 strokes : 17.0

Tolerance

cm3/1000 strokes : +-

Check tolerance

cm3/1000s. : +-6.0

Spreed

Tolerance

cm3/1000 strokes : 8.0

Check tolerance

cm3/1000s. : 12.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 23.10.98 Test oil : ISO 4113

Combination No. : 0 402 678 830

Injection pump

Pump designation : PE8P120A520/5RS7386

EP type number : 0 412 628 910

Governor

Governer design. : RSUV325...1150P0A365

Governer no. : 0 421 829 113

Cust. part No. : 12277649KY0120-17

Customer-spec. information

Customer : MWM

: TBD 616 V16

Motor Power KW

: 864.0

# TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C

40

Tolerance °C

: <del>+-</del> 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 019

Opening pressure

bar

208.5

Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

D12

x inside diameter : 3.0 x length mm : 1000

### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 4.65 Tolerance mm : +- 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm: 13.00

Tolerance mm : ← 0.10

Firing order : 1-2-7-8-3-4-

: 5- 6

: 0-30-45-75-90-120 Phasing

: -315-345

Tolerance

: +- 0.50

Check

: <del>+−</del> 0.75

tolerance °NW

Start of delivery mark

Tolerance

: +- 0.50

Check

tolerance  $^{\circ}NW$  : +- 0.75

Barrel no. : 1

# BASIC SETTING

Rated speed rpm : 1150

Rack travel in mm : 12.60

Tolerance mm : +- 0.05

Del. quantity cm3/1000 strokes : 262.0  Tolerance cm3/1000 strokes : + 1.0  Check tolerance cm3/1000s. : + 4.0  Spreed	Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance cm3/1000s. : 9.0
Tolerance cm3/1000 strokes : 6.0	CONTROL LEVER
Check tolerance cm3/1000s. : 9.0	control lever position degree : 116.D tolerance degree : +- 4.0
Rated speed rpm : 300  Rack travel in mm : 6.40 Tolerance mm : + 0.10 Del. quantity cm3/1000 strokes : 38.0 Tolerance cm3/1000 strokes : + 3.0 Check tolerance cm3/1000s. : + 6.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000 strokes : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR	RATED SPEED rack travel mm : 11.60 Rated speed rpm : 1193 Tolerance 1/min : +- 5  rack travel mm : 4.00 Rated speed rpm : 1270 Tolerance 1/min : +- 15  rack travel mm : 0.85 Tolerance mm : +- 0.55 Rated speed rpm : 1380  rack travel mm : 4.00 Rated speed rpm : 1285 Tolerance 1/min : +- 15
	LOW IDLE
GUIDE SLEEVE POSITION  control lever position degree : - 3 Rated speed rpm : 800	control lever position degree : 80.0 tolerance degree : + 4.0 Setting point w/out bumper spring
Rack travel in mm: 0.50 Tolerance mm: + 0.20	Rated speed rpm : 300 rack travel mm : 5.90 Tolerance mm : + 0.10
FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 1150 Aneroid pressure hPa : 1800 Del. quantity cm3/1000 strokes : 262.0	Testing:  Rated speed rpm : 300 rack travel mm : 6.40 Tolerance mm : + 0.10  rack travel mm : 2.00 Rated speed rpm : 460 Tolerance 1/min : + 30

TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	: 1150 : 12.60 : +- 0.05
Rated speed rpm rack travel mm Tolerance mm	: 800 : 12.60 : +- 0.10
ANEROID/ALTITUDE COMPENSATOR TEST	
SETTING	
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 600 : 1800 : 12.60 : +- 0.05
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 600 : - : 8.50 : + 0.20
MEASUREMENT	
Rated speed rpm	: 600
Pressure hPa rack travel mm Tolerance mm	: 780 : 9.60 : ← 0.20
Pressure hPa rack travel mm Tolerance mm	: 1600 : 12.45 : +- 0.05
FUEL DELIVERY CHA	ARACTERISTICS
Aneroid pressure hPa Rated speed rpm	: 1800 : 800
Del. quantity cm3/1000 strokes Tolerance	: 261.0
cm3/1000 strokes Check tolerance cm3/1000s.	: +- 3.0 : +- 6.0
(1115) (0005.	
Spreed Tolerance cm3/1000 strokes Check tolerance	: 8.0

Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: +- 1.0 : +- 4.0
STARTING FUEL DEL	IVERY
Rated speed rpm rack travel mm	: 100 : > 19.50
LOW IDLE	
Rated speed rpm	: 300
Rack travel in mm Tolerance mm	
Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes	: 6.40
Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	: 6.40 : + 0.10
Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed	: 6.40 : +- 0.10 : 38.0
Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance cm3/1000 strokes	: 6.40 : + 0.10 : 38.0 : + 3.0
Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance	: 6.40 : + 0.10 : 38.0 : + 3.0 : + 6.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 27,10,98 Edition : ISO 4113 Test oil

Combination No. : 0 402 746 606

Injection pump

Pump designation : PES6P110A720RS7406 EP type number : 0 412 716 810

Governor

Governer design. : RQV300...1050PA1090

: -1K Governer no. : 0 421 815 497

Cust. part No. : 9279607

Customer-spec. information Customer : LIEBHERR Motor : D 926 TI-E

Power KW : 230.0

#### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

40 temp. °C Tolerance °C : **←** 2.0

Overflow valve : 1 417 413 049

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Overflow quantity

min. l/h : 195
Tolerance l/h : + 20.0

Test nozzle holde

: 1 688 901 101 assembly

Opening pressure

: 208.5 bar Tolerance bar : +- 1.5 Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter :

x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 3.65
Tolerance mm : + 0.05 Check

tolerance mm : +- 0.10

Rack travel in mm : 10.00 Tolerance mm :  $\leftarrow$  1.00

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

# BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 13.80 Tolerance mm : + 0.05

Del. quantity

cm3/1000 strokes : 205.0

Tolerance

cm3/1000 strokes : +- 1.0

D15

Check tolerance cm3/1000s.	: +- 4.0	GUIDE SLEEVE POSITION
Spreed		T GOIDE SLEEVE POSITION
Tolerance cm3/1000 strokes	: 5.0	control lever position degree : - 1 Rated speed rpm : 1180
Check tolerance cm3/1000s.	: 9.0	Rack travel in mm : 12.80 Tolerance mm : +- 2.00
Rated speed rpm	: 350	FULL LOAD DELIVERY AT FULL LOAD STOP
Rack travel in mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	: ← 0.10 : 25.0	Rated speed rpm : 1050 Aneroid pressure hPa : 1600 Del. quantity cm3/1000 strokes : 205.0 Tolerance cm3/1000 strokes : +- 1.0
cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 6.0	Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0
(B) SETTING OF INWITH GOVERNOR	JECTION PUMP	CONTROL LEVER
GUIDE SLEEVE TRAV	EL	control lever position degree : 116.0
Rated speed rpm guide sleeve travel mm	: 10.27	tolerance degree : +- 4.0  RATED SPEED  rack travel mm : 12.80
Tolerance mm  Rated speed rpm guide sleeve	: 350	Rated speed rpm : 1090 Tolerance 1/min : +- 5
travel mm Tolerance mm	: 1.86 : +- 0.20	rack travel mm : 4.00 Rated speed rpm : 1195 Tolerance 1/min : + 15
Rated speed rpm guide sleeve travel mm Tolerance mm	: 756 : 6.17 : ← 0.25	rack travel mm : 0.50 Tolerance mm : +- 0.50 Rated speed rpm : 1300
Rated speed rpm guide sleeve travel mm	: 480 : 3.75	<del></del>
Tolerance mm  Rated speed rpm guide sleeve		+ LOW IDLE + control lever
travel mm Tolerance mm	: 13.50 : +- 0.50	+ position degree : 71.0 + tolerance degree : + 4.0

Setting point w/out bumper spring

Rated speed rpm : 250

CRT mm min. : > 7.40

Testing:

Rated speed rpm : 350 rack travel mm : 5.20 Tolerance mm : +- 0.10

Rated speed rpm : 420

TORQUE CONTROL

Rated speed rpm : 1050 rack travel mm : 13.80 Tolerance mm : + 0.05

Rated speed rpm : 500 rack travel mm : 10.85 Tolerance mm : + 0.15

Rated speed rpm : 800 rack travel mm : 12.85 Tolerance mm : + 0.15

Rated speed rpm : 950 rack travel mm : 13.60 Tolerance mm : + 0.15

Rated speed rpm : 600 rack travel mm : 11.55 Tolerance mm : + 0.15

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 1050 Pressure hPa : 1600 rack travel mm : 13.80 Tolerance mm : + 0.05

Rated speed rpm : 1050
Pressure hPa : rack travel mm : 10.40
Tolerance mm : + 0.15

**MEASUREMENT** 

Rated speed rpm : 1050

Pressure hPa : 940 rack travel mm : 13.00 Tolerance mm :  $\leftarrow$  0.05

Pressure hPa : 670 rack travel mm : 11.25 Tolerance mm : + 0.20

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa 1600 Rated speed rpm : 500 Del. quantity cm3/1000 strokes : 194.0

Tolerance

cm3/1000 strokes : +- 3.0

Check tolerance

: +- 6.0 cm3/1000s.

Aneroid pressure

: 1600 hPa Rated speed rpm : 800 rack travel mm : 12.85 Tolerance mm : + 0.15 Del. quantity

cm3/1000 strokes : 207.0 Tolerance

cm3/1000 strokes :  $\leftarrow$  3.0 Check tolerance

cm3/1000s. : <del>+-</del> 6.0

Aneroid pressure

Rated speed rpm : 500 Del. quantity cm3/1000 strokes : 182.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  1.0

Check tolerance

cm3/1000s.

STARTING FUEL DELIVERY

100 Rated speed rpm : rack travel mm : 10.40 Tolerance mm : + 0.30

Del. quantity

cm3/1000 strokes : 175.0

Tolerance

cm3/1000 strokes : +- 15.0

Check tolerance

cm3/1000s. : +- 19.0

D17

# LOW IDLE

Rated speed rpm	:	350
Rack travel in mm Tolerance mm Del. quantity	: : +-	5.20 0.10
cm3/1000 strokes	:	25.0
Tolerance cm3/1000 strokes	: +-	3.0
Check tolerance cm3/1000s.	: +-	6.0
Spreed Tolerance cm3/1000 strokes	:	6.0
Check tolerance cm3/1000s.	:	10.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 27.10.98 : ISO 4113

Combination No. : 0 402 746 606A

Injection pump

Pump designation : PES6P110A720RS7406 EP type number : 0 412 716 810

Governor

Governer design. : RQV300...1050PA1090

: -1K

Governer no.

: 0 421 815 497

Cust. part No. : 9279608

Customer-spec. information Customer : LIEBHERR

Motor

: D 926 TI-E A3

Power KW : 230.0

# TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

Tolerance °C

2.0

Overflow valve : 1 417 413 049

Inlet press. bar :

1.5

Tolerance bar : + 0.1

Overflow quantity

min. l/h : 195 Tolerance l/h : + 20.0

Test nozzle holde

assembly

: 1 688 901 101

Opening pressure

bar

: 208.5

Tolerance bar : +- 1.5

D19

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter :

2.0

x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar: 26.0 Tolerance bar : + 1.0

Prestroke mm : 3.65
Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm : 10.00

Tolerance mm : +- 1.00

Firing order

: 1-5-3-6-2-

Phasing

: 0-60-120-180-240

: -300 : +- 0.50

Check

tolerance °NW

Tolerance

: +- 0.75

# BASIC SETTING

Rated speed rpm : 1050

Rack travel in mm : 13.80

Tolerance mm : + 0.05

Del. quantity

cm3/1000 strokes : 205.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance cm3/1000S.	: +- 4.0	+
Spreed		- GOIDE SLEEVE POSITION
Tolerance cm3/1000 strokes	: 5.0	control lever position degree : - 1 Rated speed rpm : 1180
Check tolerance cm3/1000s.	: 9.0	Rack travel in mm : 12.80 Tolerance mm : + 2.00
Rated speed rpm	: 350	FULL LOAD DELIVERY AT FULL LOAD STOP
Rack travel in mm Tolerance mm Del. quantity	: + 0.10	Rated speed rpm : 1050 Aneroid pressure hPa : 1600
cm3/1000 strokes Tolerance cm3/1000 strokes		+ Del. quantity + cm3/1000 strokes : 205.0 + Tolerance
Check tolerance cm3/1000s.		cm3/1000 strokes : + 1.0 + Check tolerance
Spreed Tolerance cm3/1000 strokes	: 6.0	+ cm3/1000S. : +- 4.0 + Spreed + Tolerance
Check tolerance cm3/1000s.		cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0
(B) SETTING OF INJ WITH GOVERNOR	ECTION PUMP	CONTROL LEVER
GUIDE SLEEVE TRAVE	ïL	control lever
Rated speed rpm guide sleeve	: 1102	tolerance degree : +- 4.0
travel mm Tolerance mm	: 10.05 : + 0.15	+ RATED SPEED + rack travel mm : 12.80 + Rated speed rpm : 1090
Rated speed rpm guide sleeve	: 350	+ Tolerance 1/min : +- 5 +
travel mm Tolerance mm	: 1.86 : + 0.20	+ rack travel mm : 4.00 + Rated speed rpm : 1195 + Tolerance 1/min : +- 15
Rated speed rpm guide sleeve travel mm	: 749 : 6.11	rack travel mm : 0.50 Tolerance mm : + 0.50
Tolerance mm	: <b>←</b> 0.25	Rated speed rpm : 1300
Rated speed rpm guide sleeve travel mm	: 480 : 3.75	<u> </u>
Tolerance mm	: +- 0.25	LOW IDLE
Rated speed rpm guide sleeve travel mm	: 1330 : 13.50	control lever position degree : 71.0
Tolerance mm	: +- 0.50	+ tolerance degree : +- 4.0

D20

Setting point w/o	out bumper spring
Rated speed rpm	: 250
CRT mm min.	: > 7.40
Testing:	
Rated speed rpm rack travel mm Tolerance mm	: 350 : 5.20 : + 0.10
Rated speed rpm	: 420
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	: 1050 : 13.80 : +- 0.05
Rated speed rpm rack travel mm Tolerance mm	: 500 : 10.85 : ← 0.15
Rated speed rpm rack travel mm Tolerance mm	: 800 : 12.85 : ← 0.15
Rated speed rpm rack travel mm Tolerance mm	: 950 : 13.60 : +- 0.15
Rated speed rpm rack travel mm Tolerance mm	: 11.55
ANEROID/ALTITUDE COMPENSATOR TEST	
SETTING	
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 1050 : 1600 : 13.80 : +- 0.05
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 1050 : - : 10.40 : + 0.10
MEASUREMENT	
Rated speed rpm	: 1050

Pressure hPa rack travel mm Tolerance mm	: 670 : 11.25 : + 0.20
FUEL DELIVERY CHA	RACTERISTICS
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 1600 : 500 : 194.0 : + 3.0 : + 6.0
Aneroid pressure hPa Rated speed rpm rack travel mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 1600 : 800 : 12.85 : + 0.15 : 207.0 : + 3.0 : + 6.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 182.0 : +- 1.0 : +- 4.0
STARTING FUEL DEL Rated speed rpm rack travel mm Tolerance mm Del. quantity cm3/1000 strokes	: 100 : 10.40 : + 0.30

Tolerance mm : + 0.05

Pressure hPa : 940 rack travel mm : 13.00

Tolerance cm3/1000 strokes :  $\leftarrow$  15.0 Check tolerance

cm3/1000s. :  $\leftarrow$  18.0

LOW IDLE

Rated speed rpm : 350

Rack travel in mm : 5.20 Tolerance mm :  $\leftarrow$  0.10 Del. quantity cm3/1000 strokes : 25.0 Tolerance

cm3/1000 strokes : +- 3.0

Check tolerance

cm3/1000s.: ← 6.0 Spreed

Tolerance

cm3/1000 strokes : 6.0

Check tolerance

: 10.0 cm3/1000s.

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 27.10.98 : ISO 4113 Edition Test oil

Combination No. : 0 402 746 645

Injection pump

Pump designation : PES6P120A320RS7364 EP type number : 0 412 726 930

Governor

Governer design. : RQV300...1050PA1204

Governer no. : 0 421 814 123

Cust. part No. : CCEP 5148A 66-236

Customer—spec. information

Customer : RENAULT V.I.

Motor : MIDR 06.20.45D41 Power KW : 219.0

# TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 2 417 413 078

Inlet press. bar : 2.5 Tolerance bar : +- 0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

: 208.5 bar Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x Length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 4.55 Toterance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 20.25

Tolerance mm : +- 0.75

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance : **←** 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

°NW after s.o.d. : -0.40Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

### CRT ZERO POSITION

Rack travel in mm: 13.80 Tolerance mm : + 0.05

BASIC SETTING

Rated speed rpm : 600 +	guide sleeve
+	travel mm : 2.40
Del. quantity +	Tolerance mm : +- 0.25
cm3/1000 strokes : 287.0 +	
	Rated speed rpm : 415
Tolerance	guide sleeve
cm3/1000 strokes : + 1.0 +	travel mm : 3.28
	Tolerance mm : +- 0.25
Check tolerance	Dated aread was
cm $3/1000$ s. : + 4.0 +	Rated speed rpm : 460 quide sleeve
Channel T	travel mm : 3.86
Spreed	Tolerance mm : +- 0.25
Tolerance	Toter ance min . • 0.25
cm3/1000 strokes : 5.0	Rated speed rpm : 1460
UIIS/ 1000 311 ORCS . 3.0	guide sleeve
Check tolerance	travel mm : 11.50
cm3/1000s. : 9.0	Tolerance mm : +- 0.50
-	
ļ	GUIDE SLEEVE POSITION
Rated speed rpm : 300 +	
+	
Rack travel in mm: -7.50 +	control lever
Tolerance mm : $\leftarrow$ 0.10 $+$	position degree : - 1
Del. quantity +	Rated speed rpm : 1230
cm3/1000 strokes : 26.0 +	
Tolerance +	Rack travel in mm : 11.70
cm3/1000 strokes : + 2.0 +	Tolerance mm : +- 1.30
Check tolerance +	
cm3/1000s. : + 5.0 +	
Spreed	FULL LOAD DELIVERY AT FULL LOAD STOP
Tolerance +	
Tolerance + cm3/1000 strokes : 8.0 +	Rated speed rpm : 600
Tolerance + cm3/1000 strokes : 8.0 + Check tolerance +	Rated speed rpm : 600 Aneroid pressure
Tolerance + cm3/1000 strokes : 8.0 +	Rated speed rpm : 600 Aneroid pressure hPa : 1000
Tolerance + cm3/1000 strokes : 8.0 + Check tolerance +	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0 Check tolerance cm3/1000s. : 12.0 Check tolerance cm3/1000s.	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0 Check tolerance cm3/1000s. : 12.0 Check tolerance cm3/1000s.	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0 Check tolerance cm3/1000s. : 12.0 Check tolerance cm3/1000s.	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000S. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000S. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve travel mm : 1.33	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/100J strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000S. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/100J strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0  CONTROL LEVER control lever
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve travel mm : 1.33 Tolerance mm : + 0.25	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/100J strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0  CONTROL LEVER  control lever position degree : 303.0
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve travel mm : 1.33 Tolerance mm : + 0.25	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/100J strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0  CONTROL LEVER control lever
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve travel mm : 1.33 Tolerance mm : + 0.25  Rated speed rpm : 752 guide sleeve	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0  CONTROL LEVER  control lever position degree : 303.0 tolerance degree : +- 4.0
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve travel mm : 1.33 Tolerance mm : + 0.25  Rated speed rpm : 752 guide sleeve travel mm : 752 guide sleeve travel mm : 6.09	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0  CONTROL LEVER  control lever position degree : 303.0 tolerance degree : +- 4.0  RATED SPEED
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve travel mm : 1.33 Tolerance mm : + 0.25  Rated speed rpm : 752 guide sleeve	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0  CONTROL LEVER  control lever position degree : 303.0 tolerance degree : +- 4.0  RATED SPEED rack travel mm : -1.00
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve travel mm : 1.33 Tolerance mm : + 0.25  Rated speed rpm : 752 guide sleeve travel mm : 6.09 Tolerance mm : + 0.25	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0  CONTROL LEVER  control lever position degree : 303.0 tolerance degree : +- 4.0  RATED SPEED rack travel mm : -1.00 Rated speed rpm : 1145
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1135 guide sleeve travel mm : 8.45 Tolerance mm : + 0.25  Rated speed rpm : 300 guide sleeve travel mm : 1.33 Tolerance mm : + 0.25  Rated speed rpm : 752 guide sleeve travel mm : 752 guide sleeve travel mm : 6.09	Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 287.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0  CONTROL LEVER  control lever position degree : 303.0 tolerance degree : +- 4.0  RATED SPEED rack travel mm : -1.00

rack travel mm Rated speed rpm Tolerance 1/min rack travel mm Tolerance mm Rated speed rpm	: 1315 : +− 15 : −13.30 : +− 0.50
LOW IDLE	
control lever position degree tolerance degree	: 267.0 : ← 4.0
Testing:	
Rated speed rpm rack travel mm Tolerance mm	: 300 : -7.50 : + 0.10
Rated speed rpm	: 200
CRT mm max.	: < -5.00
Rated speed rpm	: 360
TORQUE CONTROL Rated speed rpm	: 600
Rated speed rpm Tolerance mm	: 1050 : +- 0.10
ANEROID/ALTITUDE COMPENSATOR TEST	
SETTING	
Rated speed rpm Pressure hPa	: 500 : 1000
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 500 : - : -2.55 : +- 0.20
MEASUREMENT	
Rated speed rpm	: 500

Pressure hPa rack travel mm Tolerance mm	: 400 : -0.50 : + 0.05	
Start interlock		
Rated speed rpm Rated speed rpm	: > 100 : < 230	
Check speed 1/min Check	: > 80	
speed 1/min	: < 250	
FUEL DELIVERY CHA	RACTERISTICS	
Aneroid pressure hPa Rated speed rpm Del. quantity	: 1000 : 1050	
cm3/1000 strokes Tolerance	: 295.0	
cm3/1000 strokes Check tolerance	: +- 3.0	
cm3/1000s.	: +- 6.0	
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: - : 500 : 162.0 : + 1.0 : + 4.0	
STARTING FUEL DEL	IVERY	
Rated speed rpm rack travel mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.		
LOW IDLE	<del></del>	

Rated speed rpm	:		300
Rack travel in mm Tolerance mm	:	+-	-7.50 0.10
Del. quantity	•	-	0.10
cm3/1000 strokes Tolerance	:		26.0
cm3/1000 strokes	:	+-	2.0
Check tolerance cm3/1000s.	•	+	5.0
Spreed	·		2,0
Tolerance cm3/1000 strokes Check tolerance	:		8.0
cm3/1000s.	:		12.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 22.10.98 Edition Edition : 22.70.98
Test oil : ISO 4113

Combination No. : 0 402 746 657

Injection pump

Pump designation : PES6P120A320RS7457 EP type number : 0 412 726 977

Governor

Governer design. : RQV325...1200PA1393

Governer no. : 0 421 814 210

Cust. part No. :

Customer-spec. information Customer : STAR : T359E-CF Motor Power KW : 115.0

#### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0

Overflow quantity

min. L/h : 190
Tolerance L/h : +- 20.0

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0

x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 5.45 Tolerance mm : +- 0.05

Check

tolerance mm : +- 0.10

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

: **←** 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance : <del>+−</del> 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

### BASIC SETTING

Rated speed rpm : 1200

Rack travel in mm: 13.00 Tolerance mm :  $\leftarrow$  0.05

Del. quantity cm3/1000 strokes : 220.0  Tolerance cm3/1000 strokes : ← 1.0  Check tolerance cm3/1000s. : ← 4.0  Spreed  Tolerance cm3/1000s. : ← 4.0  Spreed  Check tolerance cm3/1000s. : ← 4.0  Check tolerance cm3/1000s. : ← 4.0  Check tolerance cm3/1000s. : ← 4.0  Check tolerance cm3/1000s. : ← 0.0  Check tolerance cm3/1000s. : ← 0.10  Rated speed rpm : 1320  Rack travel in mm : 6.20 Tolerance mm : ← 0.10  Rated speed rpm : 1200  Aneroid pressure cm3/1000 strokes : ← 3.0  Check tolerance cm3/1000 strokes : ← 3.0  Check tolerance cm3/1000s. : ← 6.0  Spreed  Tolerance cm3/1000s. : ← 6.0  Constrol lever position degree : − 1  Rated speed rpm : 1200  Aneroid pressure cm3/1000 strokes : ← 1.0  Check tolerance cm3/1000s. : ← 6.0  Spreed  Tolerance cm3/1000s. : ← 6.0  Check tolerance cm3/1000s. : ← 4.0  Control lever position degree : 121.0  Tolerance cm3/1000s. : ← 4.0  Control lever position degree : ← 4.0  Control lever position degree : ← 4.0  Control lever position degree : ← 4.0  Tolerance degree : ← 4.0  Rated speed rpm : 1259  Guide sleeve  travel mm : ← 0.15  Rated speed rpm : 1265  Tolerance degree : ← 4.0  Rated speed rpm : 1265  Tolerance mm : ← 0.20  Rated speed rpm : 1390  Tolerance mm : ← 0.50  Rated speed rpm : 1470  Rated speed rpm : 1470		_	∔ guide sleeve
cm3/1000 strokes : + 1.0         guide sleeve travel mm : 13.50           Check tolerance cm3/1000s. : + 4.0         GUIDE SLEEVE POSITION           Tolerance cm3/1000 strokes : 5.0         control lever position degree : -1 Rated speed rpm : 1320           Rack travel in mm : 6.20         Rack travel in mm : 16.50           Tolerance mm : + 0.10         Rated speed rpm : 1200           Pel. quantity cm3/1000 strokes : 14.0         Pole quantity cm3/1000 strokes : 220.0           Check tolerance cm3/1000 strokes : + 3.0         cm3/1000 strokes : 220.0           Check tolerance cm3/1000s. : + 6.0         cm3/1000 strokes : 220.0           Spreed cm3/1000 strokes : 8.0         cm3/1000 strokes : + 1.0           Check tolerance cm3/1000s. : + 6.0         cm3/1000 strokes : + 1.0           Check tolerance cm3/1000s. : + 4.0         cm3/1000 strokes : + 1.0           Check tolerance cm3/1000s. : + 4.0         cm3/1000 strokes : + 1.0           Check tolerance cm3/1000s. : + 4.0         cm3/1000s strokes : + 1.0           Check tolerance cm3/1000s. : + 4.0         cm3/1000s strokes : + 2.0           Check tolerance cm3/1000s. : + 4.0         cm3/1000s strokes : + 3.0           Check tolerance cm3/1000s. : + 4.0         cm3/1000s strokes : + 4.0           Check tolerance cm3/1000s. : + 4.0         cm3/1000s strokes : + 3.0           Check tolerance cm3/1000s strokes : + 3.0         cm3/1000s strokes :		: 220.0	travel mm : 4.05
Tolerance mm : + 0.50		: +- 1.0	guide sleeve
Tolerance cm3/1000 strokes : 5.0		: + 4.0	
cm3/1000 strokes : 5.0         control lever position degree : - 1 Rated speed rpm : 1320           Check tolerance cm3/1000s. : 9.0         Rack degree : - 1 Rated speed rpm : 1320           Rated speed rpm : 325         Rack travel in mm : 16.50 Tolerance mm : + 1.30           Rack travel in mm : 6.20 Tolerance mm : + 0.10 Del. quantity cm3/1000 strokes : 14.0 Pa quantity cm3/1000 strokes : 4.0 Del. quantity policy degree cm3/1000s strokes : 220.0 Tolerance cm3/1000s strokes : 220.0 Tolerance cm3/1000s strokes : 220.0 Tolerance cm3/1000s strokes : 8.0 Spreed Check tolerance cm3/1000s strokes : 8.0 Spreed Tolerance cm3/1000s strokes : 5.0 Check tolerance cm3/1000s strokes : 5.0 Check tolerance cm3/1000s strokes : 5.0 Check tolerance cm3/1000s strokes : 5.0 Check tolerance cm3/1000s strokes : 5.0 Check tolerance cm3/1000s strokes : 5.0 Check tolerance cm3/1000s. : 9.0           (B) SETTING OF INJECTION PUMP WITH GOVERNOR         CONTROL LEVER           CUIDE SLEEVE TRAVEL         CONTROL LEVER           Rated speed rpm : 1259 guide sleeve travel mm : 9.83 Tolerance mm : + 0.15         RATED SPEED rack travel mm : 12.00 Rated speed rpm : 1265 Tolerance 1/min : + 5 Tolerance 1/min : + 5 Tolerance 1/min : + 5 Tolerance 1/min : + 15           Rated speed rpm : 897 guide sleeve travel mm : 0.50 Tolerance mm : + 0.50 Tolerance mm :	Spreed		GUIDE SLEEVE POSITION
Rated speed rpm : 1320		: 5.0	
Rated speed rpm : 325		: 9.0	
Rack travel in mm : 6.20			
Rack travel in mm : 6.20 Tolerance mm : + 0.10	Rated speed rpm	: 325	
Del. quantity cm3/1000 strokes : 14.0 Tolerance cm3/1000 strokes : + 3.0 Check tolerance cm3/1000 strokes : + 6.0 Spreed Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000 strokes : + 1.0 Spreed Tolerance cm3/1000 strokes : + 1.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 4.0 Spreed Tolerance cm3/1000 strokes : + 4.0 Spreed Tolerance cm3/1000s. : + 4.0 Check tolerance cm3/1000s. : 9.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1259 guide sleeve travel mm : 9.83 Tolerance mm : + 0.15 RATED SPEED rack travel mm : 12.00 Rated speed rpm : 1265 Tolerance 1/min : + 5 Tolerance 1/min : + 5  Tolerance 1/min : + 5  Tolerance 1/min : + 15  guide sleeve travel mm : 4.00 Rated speed rpm : 1390 Tolerance 1/min : + 15  guide sleeve travel mm : 6.81 Tolerance 1/min : + 15  Tolerance 1/min : + 0.50 Rated speed rpm : 1390 Tolerance 1/min : + 15  Tolerance mm : + 0.50 Rated speed rpm : 0.50 Tolerance mm : + 0.50 Rated speed rpm : 1470	Rack travel in mm	ı: 6.20 -	FULL LOAD DELIVERY AT FULL LOAD STOP
cm3/1000 strokes : 14.0       hPa : 900         Tolerance cm3/1000 strokes : + 3.0       bel. quantity cm3/1000 strokes : 220.0         Check tolerance cm3/1000s. : + 6.0       cm3/1000 strokes : + 1.0         Spreed       Check tolerance cm3/1000s. : + 4.0         Cm3/1000 strokes : 8.0       Spreed         Check tolerance cm3/1000s. : 12.0       Spreed         Check tolerance cm3/1000s. : 12.0       Check tolerance cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       Check tolerance cm3/1000s. : 9.0         CB) SETTING OF INJECTION PUMP WITH GOVERNOR       CONTROL LEVER         GUIDE SLEEVE TRAVEL       Control lever position degree : 121.0         Guide sleeve travel mm : 9.83       Tolerance degree : + 4.0         Tolerance mm : + 0.15       RATED SPEED rack travel mm : 12.00         Rated speed rpm : 325       Rated speed rpm : 1265         Guide sleeve travel mm : 1.44       Tolerance 1/min : + 5         Tolerance mm : + 0.20       rack travel mm : 4.00         Rated speed rpm : 1390       Tolerance 1/min : + 15         Guide sleeve travel mm : 6.81       rack travel mm : 0.50         Tolerance mm : + 0.50       Tolerance mm : + 0.50         Rated speed rpm : 1470	-	: +- 0.10	
cm3/1000 strokes : + 3.0       cm3/1000 strokes : 220.0         Check tolerance cm3/1000s. : + 6.0       cm3/1000 strokes : + 1.0         Spreed       Check tolerance cm3/1000s. : + 4.0         Check tolerance cm3/1000s. : 12.0       Spreed Tolerance cm3/1000s. : + 4.0         Check tolerance cm3/1000s. : 12.0       cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       cm3/1000 strokes : 5.0         Check tolerance cm3/1000s. : 9.0       9.0         CONTROL LEVER       control lever position degree : 121.0         Follows SLEEVE TRAVEL       control lever position degree : 121.0         Rated speed rpm : 9.83       rack travel mm : 12.00         Rated speed rpm : 1265       rack travel mm : 4.00         Rated speed rpm : 1265       rack travel mm : 4.00         Rated speed rpm : 1390       rack travel mm : 4.00         Rated speed rpm : 1390       rack travel mm : 4.00	cm3/1000 strokes	: 14.0	hPa : 900
cm3/1000S.       : + 6.0       cm3/1000 strokes : + 1.0         Spreed       cm3/1000 strokes : 8.0       spreed         Check tolerance       cm3/1000 strokes : 5.0         Control lever       control lever         Rated speed rpm : 12.00       RATED SPEED         rack travel mm : 12.00       Rated speed rpm : 1390         Tolerance lmm : 4.00       rack travel mm :	cm3/1000 strokes	: +- 3.0	cm3/1000 strokes : 220.0
Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000S. : 12.0 Check tolerance cm3/1000S. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR   CONTROL LEVER  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1259 guide sleeve travel mm : 9.83 Tolerance mm : + 0.15 Rated speed rpm : 325 guide sleeve travel mm : 1.44 Tolerance mm : + 0.20 Rated speed rpm : 897 guide sleeve travel mm : 6.81 Tolerance mm : + 0.25 Rated speed rpm : 1390 Rated speed rpm : 159 Guide sleeve travel mm : 0.50 Tolerance mm : + 0.50 Rated speed rpm : 159 Rated speed rpm : 159 Rated speed rpm : 1470 Rated speed rpm : 1470	cm3/1000s.	: +- 6.0	cm3/1000 strokes : +- 1.0
Tolerance	Tolerance		- cm3/1000s. : +- 4.0
Check tolerance cm3/1000s. : 9.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  CONTROL LEVER  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1259	Check tolerance	+	Tolerance
(B) SETTING OF INJECTION PUMP WITH GOVERNOR  CONTROL LEVER  CONTROL CEVEN  12.00  Rated speed rpm : 1	cm3/1000s.	: 12.0	Check tolerance
GUIDE SLEEVE TRAVEL  Rated speed rpm : 1259 guide sleeve travel mm : 9.83 Tolerance mm : + 0.15  RATED SPEED rack travel mm : 12.00 Rated speed rpm : 325 guide sleeve travel mm : 1.44 Tolerance mm : + 0.20  Rated speed rpm : 897 Rated speed rpm : 1390 Rated speed rpm : 1390 Rated speed rpm : 6.81 Tolerance mm : + 0.25  Rated speed rpm : 0.50 Rated speed rpm : 1470		JECTION PUMP	- cm3/1000s. : 9.0 -
Control lever   position degree   121.0   tolerance degree   + 4.0			- CONTROL LEVER
guide sleeve       tolerance degree : + 4.0         travel mm       : 9.83         Tolerance mm       : + 0.15         Rated speed rpm       : 12.00         Rated speed rpm       : 1265         guide sleeve       Tolerance 1/min : + 5         travel mm       : 1.44         Tolerance mm       : 4.00         Rated speed rpm       : 1390         Rated speed rpm       : 1390         Tolerance 1/min       : + 15         guide sleeve       - 70.50         travel mm       : 6.81         Tolerance mm       : + 0.50         Rated speed rpm       : 1470	GUIDE SLEEVE TRAV	EL +	- control lever
Tolerance mm : + 0.15  Rated speed rpm : 325  guide sleeve  travel mm : 1.44  Tolerance mm : + 0.20  Rated speed rpm : 1390  Rated speed rpm : 1390  Rated speed rpm : 1390  Rated speed rpm : 6.81  Tolerance mm : + 0.25  Rated speed rpm : 1390  Rated speed rpm : 1390  Rated speed rpm : 1390  Tolerance 1/min : + 15  Rated speed rpm : 1390  Rated speed rpm : 1390  Tolerance 1/min : + 0.50  Rated speed rpm : 1470	guide sleeve	+	
Rated speed rpm : 325  guide sleeve			
Tolerance mm : + 0.20	guide sleeve	+	- Rated speed rpm : 1265
Rated speed rpm : 897			
travel mm : 6.81 + rack travel mm : 0.50 Tolerance mm : + 0.50 Rated speed rpm : 1470		: 897	
Rated speed rpm : 1470	travel mm		
Rated speed rpm : 56U +		-	
+	Rated speed rpm	: 560	<u>-</u> -

LOW IDLE	
control lever position degree tolerance degree	: 82.0 : ← 4.0
Setting point w/c	out bumper spring
Rated speed rpm	: 200
CRT mm min.	: > 10.00
Testing:	
Rated speed rpm rack travel mm Tolerance mm	: 325 : 6.20 : +- 0.10
Rated speed rpm	: 375
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	: 1200 : 13.00 : +- 0.05
Rated speed rpm rack travel mm Tolerance mm	: 800 : 13.60 : ← 0.10
ANEROID/ALTITUDE COMPENSATOR TEST	
SETTING	
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 500 : 900 : 13.00 : + 0.05
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 500 : – : 11.70 : + 0.20
MEASUREMENT	
Rated speed rpm	: 500
Pressure hPa rack travel mm Tolerance mm	: 220 : 12.60 : ← 0.20
Pressure hPa rack travel mm	: 150 : 12.10

Tolerance mm	: +- 0.05
Start interlock	
Rated speed rpm Rated speed rpm	: > 100 : < 245
Check speed 1/min Check speed 1/min	: > 80 : < 265
FUEL DELIVERY CHA	RACTERISTICS
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000s.  Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: +- 3.0 : +- 6.0 : : 500
STARTING FUEL DEL	IVERY
Rated speed rpm rack travel mm Tolerance mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	
LOW IDLE	
Rated speed rpm	: 325
Rack travel in mm	: 6.20

E01

Tolerance mm	: +-	0.10
Del. quantity cm3/1000 strokes Tolerance	:	14.0
cm3/1000 strokes	: +-	3.0
Check tolerance cm3/1000s.	: +-	6.0
Spreed Tolerance		
cm3/1000 strokes Check tolerance	:	8.0
cm3/1000s.	:	12.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 27.10.98 : ISO 4113

Combination No. : 0 402 746 994

Injection pump

Pump designation : PES6P120A320RS7344

EP type number : 0 412 726 914

Governor

Governer design. : RQV275...1000PA1161

Governer no. : 0 421 814 100

Cust. part No. : CCEP 5143A 66-231

Customer-spec. information

Customer : RENAULT V.I.

Motor

: MIDR 062045 E/41

Power KW

: 249.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C

40

temp. °C : 40 Tolerance °C : + 2.0

Overflow valve : 2 417 413 071

Inlet press. bar : 2.5

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

: 208.5

Tolerance bar : +- 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

CRT ZERO POSITION

x inside diameter : 3.0 x length mm : 600

### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Test pressure bar: 26.0 Tolerance bar :  $\leftarrow$  1.0

Prestroke mm : 4.50 Tolerance mm : + 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 11.00

Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance °NW : **←** 0.75

Start of delivery mark

°NW after s.o.d. : -0.15 Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

betw. rack trav.

21.00

and maximum rack

travel

11.00

Difference ° CS :

2.25

	† Tolerance mm : +- 0.25
Rack travel in mm : 12.60 Tolerance mm : +- 0.05	Rated speed rpm : 793 guide sleeve
	+ travel mm : 6.00 + Tolerance mm : + 0.25
BASIC SETTING	+
Rated speed rpm : 600	Rated speed rpm : 343 guide sleeve travel mm : 2.33
Del. quantity cm3/1000 strokes : 285.0	Tolerance mm : + 0.25
Tolerance cm3/1000 strokes : +- 1.0	+ Rated speed rpm : 393 + guide sleeve + travel mm : 2.95
<u></u>	Tolerance mm : +- 0.25
Check tolerance cm3/1000s. : +- 4.0	Rated speed rpm : 500 guide sleeve
Spreed	travel mm : 3.72
- ·	Tolerance mm : + 0.25
Tolerance cm3/1000 strokes : 5.0	+ Rated speed rpm : 1410 + guide sleeve
Check tolerance	+ travel mm : 11.50
cm3/1000s. : 9.0	+ Tolerance mm : + 0.50
	CHINE SI FEUE DOSTITION
Rated speed rpm : 300	+ GUIDE SLEEVE POSITION
Rack travel in mm : -7.70	+ control lever
Tolerance mm : + 0.10	position degree : - 1
	+ Rated speed rpm : 1235
Del. quantity	I ware speed that . 1500
cm3/1000 strokes : 28.0	+
cm3/1000 strokes : 28.0 Tolerance	Rack travel in mm: 11.70
cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0	+
cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0	Rack travel in mm : 11.70 Tolerance mm : +- 1.30
cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed	Rack travel in mm: 11.70
<pre>cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0</pre>	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600
cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance	Rack travel in mm : 11.70 Tolerance mm : +- 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure
<pre>cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0</pre>	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity
cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure hPa : 1000
<pre>cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0</pre>	Rack travel in mm: 11.70 Tolerance mm: + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm: 600 Aneroid pressure hPa: 1000 Del. quantity cm3/1000 strokes: 285.0
cm3/1000 strokes : 28.0  Tolerance cm3/1000 strokes : + 2.0  Check tolerance cm3/1000s. : + 5.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 12.0	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 285.0 Tolerance cm3/1000 strokes : + 1.0
cm3/1000 strokes : 28.0  Tolerance cm3/1000 strokes : + 2.0  Check tolerance cm3/1000s. : + 5.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 12.0	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 285.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed
Cm3/1000 strokes : 28.0  Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1086	Rack travel in mm: 11.70 Tolerance mm: + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm: 600 Aneroid pressure hPa: 1000 Del. quantity cm3/1000 strokes: 285.0 Tolerance cm3/1000 strokes: + 1.0 Check tolerance cm3/1000s. : + 4.0
Tolerance cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1086 guide sleeve travel mm : 8.09	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 285.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0
Tolerance cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL Rated speed rpm : 1086 guide sleeve	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 285.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance
Tolerance cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1086 guide sleeve travel mm : 8.09 Tolerance mm : + 0.25  Rated speed rpm : 300	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 285.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0
Tolerance cm3/1000 strokes : 28.0 Tolerance cm3/1000 strokes : + 2.0 Check tolerance cm3/1000s. : + 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0  (B) SETTING OF INJECTION PUMP WITH GOVERNOR  GUIDE SLEEVE TRAVEL  Rated speed rpm : 1086 guide sleeve travel mm : 8.09 Tolerance mm : + 0.25	Rack travel in mm : 11.70 Tolerance mm : + 1.30  FULL LOAD DELIVERY AT FULL LOAD STOP  Rated speed rpm : 600 Aneroid pressure hPa : 1000 Del. quantity cm3/1000 strokes : 285.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance

control lever position degree tolerance degree	: 120.0 : +- 4.0
RATED SPEED rack travel mm Rated speed rpm Tolerance 1/min	:
rack travel mm Rated speed rpm Tolerance 1/min	: -8.60 : 1215 : +- 15
rack travel mm Tolerance mm Rated speed rpm	: +- 0.50
LOW IDLE	
control lever position degree tolerance degree	: 65.0 : +- 4.0
Setting point w/o	out bumper spring
Rated speed rpm	: 200
CRT mm min.	: < -5.70
CRT mm min. Testing:	: < -5.70
Testing: Rated speed rpm rack travel mm	: 300 : -7.70 : +- 0.10
Testing: Rated speed rpm rack travel mm Tolerance mm	: 300 : -7.70 : +- 0.10 : 400
Testing: Rated speed rpm rack travel mm Tolerance mm Rated speed rpm TORQUE CONTROL	: 300 : -7.70 : +- 0.10 : 400
Testing:  Rated speed rpm rack travel mm Tolerance mm  Rated speed rpm  TORQUE CONTROL Rated speed rpm  Rated speed rpm	: 300 : -7.70 : +- 0.10 : 400 : 600 : 1000
Testing:  Rated speed rpm rack travel mm Tolerance mm  Rated speed rpm  TORQUE CONTROL Rated speed rpm  Rated speed rpm  Tolerance mm	: 300 : -7.70 : +- 0.10 : 400 : 600 : 1000
Testing: Rated speed rpm rack travel mm Tolerance mm Rated speed rpm TORQUE CONTROL Rated speed rpm Rated speed rpm Tolerance mm ANEROID/ALTITUDE COMPENSATOR TEST	: 300 : -7.70 : +- 0.10 : 400 : 600 : 1000 : +- 0.10

Pressure hPa rack travel mm Tolerance mm	: - : -3.45 : +- 0.30
MEASUREMENT	
Rated speed rpm	: 500
Pressure hPa rack travel mm Tolerance mm	: 320 : -2.70 : +- 0.15
Pressure hPa rack travel mm Tolerance mm	: 640 : -0.75 : +- 0.05
Start interlock	
Rated speed rpm Rated speed rpm	: > 100 : < 225
Check speed 1/min	: > 80
Check speed 1/min	: < 245
FUEL DELIVERY CHA	ARACTERISTICS
<del></del>	
Aneroid pressure hPa Rated speed rpm	: 1000 : 1000

•			
Aneroid pressure			
hPa	:	11	000
Rated speed rpm	:	11	000
Del. quantity			
cm3/1000 strokes	:	;	284.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Check tolerance			
cm3/1000s.	:	+-	6.0
Aneroid pressure			···

Aneroid pressure			
hPa	:		-
Rated speed rpm	:		500
Del. quantity			
cm3/1000 strokes	:		121.0
Tolerance			
cm3/1000 strokes	:	+-	1.0
Check tolerance			
cm3/1000s.	:	+-	4.0

# STARTING FUEL DELIVERY

Rated speed rpm : 100 rack travel mm : 20.25 Tolerance mm :  $\leftarrow 0.75$ 

E05

Del. quantity

cm3/1000 strokes : 150.0

Tolerance

cm3/1000 strokes : +- 15.0

Check tolerance

: +- 19.0 cm3/1000S.

### LOW IDLE

Rated speed rpm : 300

Rack travel in mm : -7.70 Tolerance mm : + 0.10 Del. quantity

cm3/1000 strokes : 28.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  2.0

Check tolerance cm3/1000s. : +- 5.0

Spreed

Tolerance

cm3/1000 strokes : 8.0

Check tolerance cm3/1000s. 12.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 22.10.98 Edition Test oil : ISO 4113

Combination No. : 0 402 846 083

Injection bumb

Pump designation : PE6P120A320RS8052 EP type number : 0 412 826 038

Governor

Governer design. : RQV300...1100PA1248

Governer no. : 0 421 814 165

Cust. part No. : 11031370

: -P02 v.11.97

Customer-spec. information

Customer : VCE

Motor : TD 104 KAE Power KW : 216.0

#### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet temp. °C : 40 Tolerance °C : +- 2.0

Overflow valve : 2 417 413 078

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Tolerance l/h: +- 20.0

Test nozzle holde

: 1 688 901 103 assembly

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0

x length mm : 600

#### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 4.25 Tolerance mm : ← 0.05

Check

tolerance mm : + 0.10

Rack travel in mm : 11.00 Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-5-3-6-2-

: 4

: 0-60-120-180-240 Phasing

: -300

: **←** 0.50 Tolerance

Check

tolerance °NW : **←** 0.75

Start of delivery mark

: +- 0.50 Tolerance

Check

tolerance "NW :  $\leftarrow$  0.75

: 1 Barrel no.

### BASIC SETTING

Rated speed rpm : 700

Tolerance mm :  $\leftarrow$  0.05

		1
Del. quantity cm3/1000 strokes	: 280.0	Rated speed rpm : 1310 guide sleeve travel mm : 11.50
Tolerance cm3/1000 strokes	: + 1.0	Tolerance mm : + 0.50
Check tolerance cm3/1000s.	: <del>+</del> 4.0	GUIDE SLEEVE POSITION
Spreed		control lever position degree : - 1
Tolerance cm3/1000 strokes	: 8.0	Rated speed rpm : 1194
Check tolerance cm3/1000s.	: 11.0	+ Rack travel in mm : 10.00 + Tolerance mm : +- 1.30 +
		FULL LOAD DELIVERY AT FULL LOAD STOP
	: 300 : +- 0.10	Rated speed rpm : 700 Aneroid pressure
Del. quantity cm3/1000 strokes	: 150.0	+ hPa : 1500 + Del. quantity
Tolerance cm3/1000 strokes Check tolerance	: <del></del> 2.5	+ cm3/1000 strokes : 280.0 + Tolerance + cm3/1000 strokes : + 1.0
	: <del>+-</del> 5.0	Check tolerance cm3/1000s. : +- 4.0
Tolerance cm3/1000 strokes	: 5.0	+ Spreed + Tolerance
Check tolerance cm3/1000s.	: 8.0	+ cm3/1000 strokes : 8.0 + Check tolerance + cm3/1000S. : 11.0
(B) SETTING OF INJE	ECTION PUMP	CONTROL LEVER
GUIDE SLEEVE TRAVEL		control lever
Rated speed rpm	: 1131	position degree : 63.0 tolerance degree : +- 4.0
guide sleeve travel mm Tolerance mm	: 8.39 : +- 0.15	control lever position degree : 118.0 tolerance degree : +- 4.0
Rated speed rpm : guide sleeve	: 330	RATED SPEED
travel mm Tolerance mm	: 1.83 : +- 0.20	+ rack travel mm : 11.30 + Rated speed rpm : 1130 + Tolerance 1/min : + 5
Rated speed rpm : guide sleeve	: 1044	rack travel mm : 4.00
travel mm : Tolerance mm :	: 6.97 : ← 0.25	Rated speed rpm : 1175 Tolerance 1/min : +- 15
guide sleeve	500	rack travel mm : 0.50 Tolerance mm : + 0.50
travel mm : Tolerance mm :	4.68 + + 0.25	+ Rated speed rpm : 1275 +

#### LOW IDLE

control lever

position degree : 66.0 tolerance degree : +- 4.0

control lever

position degree : 11.0 tolerance degree : +- 4.0

Setting point w/out bumper spring

Rated speed rpm : 200

CRT mm min. :> 8.00

Testing:

Rated speed rpm :

300

Tolerance mm

: +- 0.10

Rated speed rpm :

380

TORQUE CONTROL

Rated speed rpm : 700

Tolerance mm :  $\leftarrow$  0.05

### ANEROID/ALTITUDE COMPENSATOR TEST

### SETTING

Rated speed rpm : 500

Pressure hPa : 1500 rack travel mm : 12.30

Tolerance mm : +- 0.05

Rated speed rpm : 500

Pressure hPa

rack travel mm :

9.40

Tolerance mm

: <del>+-</del> 0.20

:

### MEASUREMENT

Rated speed rpm

: 500

Pressure hPa

rack travel mm

: 600 : 2.50

Tolerance mm

: **←** 0.20

rressure hPa : 220 rack travel mm : 0.25 Tolerance mm

Tolerance mm :  $\leftarrow$  0.05

# E09

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa Rated speed rpm :

700

Del. quantity

cm3/1000 strokes : 201.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

cm3/1000s.

: +- 4.0

### LOW IDLE

Rated speed rpm : Tolerance mm

300 : +- 0.10

Del. quantity

Tolerance

cm3/1000 strokes : 150.0

cm3/1000 strokes : +- 2.5

Check tolerance cm3/1000s.

: +- 5.0

Spreed

Tolerance

cm3/1000 strokes : 5.0

Check tolerance

cm3/1000s.

: 8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 26.10.98 : ISO 4113

Combination No. : 0 403 446 318

Injection pump

Pump designation : PES6MW100/320RS1214

: -1 EP type number : 0 413 406 224

Governor

Governer design. : RQV275...1250MW115

: -1K

Governer no. : 0 420 083 992

Cust. part No. :

Customer-spec. information

Customer : RVI

Motor

: MIDR 060226 V

Power KW : 129.0

#### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet temp. °C : 40 Tolerance °C : + 2.0

Overflow valve : 2 417 413 033

Inlet press. bar : 2.5

Test nozzle holde

assembly

: 1 688 901 101

Opening pressure

bar

: 208.5

Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0

x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 31.0 Tolerance bar : ← 1.0

Prestroke mm : 4.25 Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm: 18.00

Tolerance mm :  $\leftarrow$  1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance

: +- 0.50

Check

tolerance °NW : **←** 0.75

Start of delivery blocking

Barrel no. : 1

CRT ZERO POSITION

Rack travel in mm : 13.10

Tolerance mm : + 0.05

BASIC SETTING

Rated speed rpm : 1250

Tolerance mm : +- 0.05

Del. quantity cm3/1000 strokes : 110.0	Tolerance mm : +- 0.25 Rated speed rpm : 440
Tolerance + 1.0 +	guide sleeve travel mm : 2.90
Check tolerance	Tolerance mm : + 0.25
cm3/1000s. : + 3.0	Rated speed rpm : 560 guide sleeve
Spreed	travel mm : 4.01 Tolerance mm : + 0.25
Tolerance cm3/1000 strokes : 3.5	Rated speed rpm : 1650 guide sleeve
Check tolerance : 6.0 +	travel mm : 13.50 Tolerance mm : + 0.50
	GUIDE SLEEVE POSITION
Rated speed rpm : 275	
Rack travel in mm: -7.45 + Tolerance mm: + 0.10 +	control lever position degree : 298
Del. quantity	position degree : 298 Rated speed rpm : 1460
cm3/1000 strokes : 22.0	Nates Speed (pill : 1700
Tolerance	Rack travel in mm : 10.00
cm3/1000 strokes : + 2.0 +	Tolerance mm : + 2.70
Check tolerance + 4.5 +	
Spreed + 4.3	FULL LOAD DELIVERY AT FULL LOAD STOP
Tolerance	TOLE LONG GELLENT AT TOLL LONG GTO.
cm3/1000 strokes : 3.5	Rated speed rpm : 1250
Check tolerance +	Aneroid pressure
cm3/1000s. : 5.0 +	hPa : 1000
†	Del. quantity cm3/1000 strokes : 110.0
(B) SETTING OF INJECTION PUMP	Tolerance
WITH GOVERNOR	cm3/1000 strokes : + 1.0
+	Check tolerance
	cm3/1000s. : +- 3.0
GUIDE SLEEVE TRAVEL	Spreed
Datad aread non . 171/	Tolerance cm3/1000 strokes : 3.5
Rated speed rpm : 1314 + guide sleeve +	Check tolerance
travel mm : 9.71	cm3/1000s. : 6.0
Tolerance mm : + 0.25	
+	
Rated speed rpm : 275	CONTROL A PURP
guide sleeve	CONTROL LEVER
travel mm : 1.00 + Tolerance mm : + 0.25 +	control lever
Toterance in . += 0.25	position degree : 292.0
Rated speed rpm : 912	tolerance degree : +- 4.0
guide sleeve	
travel mm : 6.70 +	RATED SPEED
Tolerance mm : + 0.25	rack travel mm : -1.00
+	Rated speed rpm : 1300
Rated speed rpm : 390	Tolerance 1/min : +- 15
guide sleeve + travel mm : 2.39 +	rack travel mm : -9.10
. C.37 T	I GOV CI GACC IIIIII . 7.10

rack travel mm : -12.60 Tolerance mm : + 0.50 Rated speed rpm : 1600  LOW IDLE  control lever position degree : 242.0 tolerance degree : + 4.0  Setting point w/out bumper spring Rated speed rpm : 200 CRT mm min. : < -6.85  Testing: Rated speed rpm : 275 rack travel mm : -7.45 Tolerance mm : + 0.10  TORQUE CONTROL Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05 Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05 Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05	Rated speed rpm Tolerance 1/min	: 1455 : +- 5
control lever position degree : 242.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 200  CRT mm min. : < -6.85  Testing:  Rated speed rpm : 275 rack travel mm : -7.45 Tolerance mm : + 0.10  TORQUE CONTROL Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05	Tolerance mm	: <b>←</b> 0.50
position degree : 242.0 tolerance degree : + 4.0  Setting point w/out bumper spring  Rated speed rpm : 200  CRT mm min. : < -6.85  Testing:  Rated speed rpm : 275 rack travel mm : -7.45 Tolerance mm : + 0.10  TORQUE CONTROL Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05	LOW IDLE	
Rated speed rpm : 200  CRT mm min. : < -6.85  Testing:  Rated speed rpm : 275 rack travel mm : -7.45 Tolerance mm : + 0.10  TORQUE CONTROL Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05		: 242.0 : +- 4.0
Testing:  Rated speed rpm : 275 rack travel mm : -7.45 Tolerance mm : + 0.10  TORQUE CONTROL Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.10  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05	Setting point w/ou	nt bumper spring
Testing:  Rated speed rpm : 275 rack travel mm : -7.45 Tolerance mm : + 0.10  TORQUE CONTROL Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05	Rated speed rpm	: 200
Rated speed rpm : 275 rack travel mm : -7.45 Tolerance mm : + 0.10  TORQUE CONTROL Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05	CRT mm min.	: < -6.85
Tolerance mm : -7.45 Tolerance mm : + 0.10  TORQUE CONTROL Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05	Testing:	
Rated speed rpm : 1250 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -0.90 Tolerance mm : + 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250 Rated speed rpm : 1250	rack travel mm	
Tolerance mm : -0.90 Tolerance mm : +- 0.05  Rated speed rpm : 700 rack travel mm : -4.50 Tolerance mm : +- 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : +- 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : +- 0.05  Rated speed rpm : 1250	Rated speed rpm	
rack travel mm : -4.50 Tolerance mm : + 0.10  Rated speed rpm : 350 rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250	rack travel mm	: -0.90
rack travel mm : -1.60 Tolerance mm : + 0.40  ANEROID/ALTITUDE COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250	rack travel mm	: -4.50
COMPENSATOR TEST  SETTING  Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : +- 0.05  Rated speed rpm : 1250	rack travel mm	
Rated speed rpm : 1250 Pressure hPa : 1000 Tolerance mm : + 0.05  Rated speed rpm : 1250		
Pressure hPa : 1000 Tolerance mm : +- 0.05  Rated speed rpm : 1250	SETTING	
	Pressure hPa	: 1000
rack travel mm : -1.95	Rated speed rpm Pressure hPa	: 1250 · –

	. 0.00
Tolerance mm	: +- 0.20
MEASUREMENT	
Rated speed rpm	: 1250
Pressure hPa rack travel mm Tolerance mm	: 120 : -1.45 : +- 0.15
Pressure hPa rack travel mm Tolerance mm	: 240 : -0.45 : +- 0.05
Start interlock	
Rated speed rpm Rated speed rpm	: > 200 : < 230
Check speed 1/min Check	: > 170
speed 1/min	: < 245
Aneroid pressure	
Aneroid pressure hPa Rated speed rpm Del. quantity	: 1000 : 700
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance	: 1000 : 700 : 110.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	: 1000 : 700 : 110.0 : +- 1.5
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 1000 : 700 : 110.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes	: 1000 : 700 : 110.0 : +- 1.5
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance cm3/1000 strokes Check tolerance	: 1000 : 700 : 110.0 : + 1.5 : + 4.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 1000 : 700 : 110.0 : + 1.5 : + 4.0 : 5.0 : 7.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000strokes Check tolerance cm3/1000s.  Aneroid pressure hPa Rated speed rpm	: 1000 : 700 : 110.0 : +- 1.5 : +- 4.0 : 5.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000s.  Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes	: 1000 : 700 : 110.0 : +- 1.5 : +- 4.0 : 5.0 : 7.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000s.  Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Tolerance cm3/1000 strokes	: 1000 : 700 : 110.0 : +- 1.5 : +- 4.0 : 5.0 : 7.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000s.  Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Tolerance cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	: 1000 : 700 : 110.0 : +- 1.5 : +- 4.0 : 5.0 : 7.0 : 1000 : 700 : 64.0
Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000s.  Aneroid pressure hPa Rated speed rpm Del. quantity cm3/1000 strokes Tolerance	: 1000 : 700 : 110.0 : + 1.5 : + 4.0 : 5.0 : 7.0 : 1000 : 700 : 64.0 : + 4.0

Del. quantity cm3/1000 strokes : 89.0 Tolerance cm3/1000 strokes : + 1.0

Check tolerance

cm3/1000s. : +- 3.0

### STARTING FUEL DELIVERY

Rated speed rpm : 100
rack travel mm : 20.25
Tolerance mm : + 0.75
Del. quantity
cm3/1000 strokes : 95.0
Tolerance
cm3/1000 strokes : + 10.0
Check tolerance

: +- 13.0

LOW IDLE

cm3/1000s.

Rated speed rpm : 275

Rack travel in mm : -7.45 Tolerance mm : + 0.10 Del. quantity cm3/1000 strokes : 22.0 Tolerance cm3/1000 strokes :  $\leftarrow$  2.0 Check tolerance : +- 4.5 cm3/1000s. Spreed Tolerance cm3/1000 strokes : 3.5 Check tolerance cm3/1000s. 5.0 :

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 10.11.98 : ISO 4113

Combination No. : 0 400 074 90462

Injection pump

Pump designation : PES4M55C32ORS169 EP type number : 0 410 054 959

Governor

Governer design. : RSF375/2300M56-6

Governer no. : 0 420 021 110

Cust. part No. :

Customer—spec. information

Customer : MB-PKW

Motor

: 0M601-ECE

Power KW

: 53.

### TEST BENCH REQUIREMENTS

Test oil inlet

temp. °C

: 40.0

Tolerance °C

: +-2.0

Overflow valve : 1 469 990 351

Inlet press. bar : 1.00

Tolerance bar :

+-0.1

Test nozzle holde

assembly

: 1 688 901 111

Opening pressure

bar

: 148.50

Tolerance bar : +-1.5

Test Lines : 1 680 750 014

Outside diameter :

6.0

x inside diameter: 2.0

E14

x length mm : 600

**REMARKS** 

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.00

Tolerance bar : +-1.0

Prestroke mm : 2.05 Tolerance mm : +0.0

: +-0.05

Check

tolerance mm : +-0.10

Rack travel in mm : 21.00

Tolerance mm : +-1.00

Firing order

: 1-3-4-2

Phasing

: 0-90-180-270

: 0.80

: 1.00

Start of delivery blocking

°NW after s.o.d. : 19.50

Tolerance

: +-0.20

Check

tolerance °NW

: +-0.30

Barrel no.

: 1

BASIC SETTING

Rated speed rpm :

1000

Rack travel in mm :

12.35

Tolerance mm :

+-0.05

Del. quantity

cm3/1000 strokes :

33.50

Tolerance

cm3/1000 strokes : +-0.50

Check tolerance cm3/1000s.	: + <del>-</del> 1.50	+ Tolerance mm : +-0.20
Spreed Tolerance cm3/1000 strokes	: 2.50	+ Rated speed rpm : 2950 + rack travel mm : 0.50 + Tolerance mm : +-0.50 +
Check tolerance cm3/1000s.	: 3.00	SET IDLE CONTROL LEVER POSITION
Rated speed rpm	: 375	Rated speed rpm : 1000
Rack travel in mm Tolerance mm		CRT mm max. : 1.25
Del. quantity cm3/1000 strokes Tolerance	: 6.50	+ LOW IDLE
cm3/1000 strokes Spreed Tolerance	: +-0.50	control lever position degree : 14.0 tolerance degree : +-2.0
cm3/1000 strokes	: 1.00	Setting point w/out bumper spring Rated speed rpm : 375
(B) SETTING OF IN WITH GOVERNOR	JECTION PUMP	rack travel mm : 6.50
		+ SET IDLE AUXILIARY SPRING
IDLE STAGE		+ Rated speed rpm : 400 + rack travel mm : 5.40 + Tolerance mm : +-0.10
Rack travel in mm Tolerance mm		rack travel mm : 2.00 Rated speed rpm : 710 Tolerance 1/min : +-50
FULL LOAD DELIVER	Y AT FULL LOAD STOP	Load pick-up
Rated speed rpm Ref. pressure	: 1000	Rated speed rpm : 250
ALDA / ADA hPa Del. quantity	: 1100	+ rack travel mm : >11.00
cm3/1000 strokes Tolerance		Rated speed rpm : 1000
cm3/1000 strokes Check tolerance		+ CRT mm max. : 1.25
cm3/1000s. Spreed Tolerance	: <del>+-</del> 1.50	+ rack travel mm : 6.50 + Rated speed rpm : 375
	: 2.50	
cm3/1000s.	: 3.00	TORQUE CONTROL
RATED SPEED		+ Rated speed rpm : 1000 + rack travel mm : 12.35 + Tolerance mm : +-0.05
control lever position degree	: 50.0	Rated speed rpm : 1800 rack travel mm : 11.80 Tolerance mm : +-0.10
Rated speed rpm rack travel mm	: 2500 : 8.70	Rated speed rpm : 2300

ck travel mm lerance mm	: 11.5 : +-0.1		- Check tolerance - cm3/1000s.	:	3.00
JUSTMENT TEST A	IDA/ALDA		WICH IN F		
TTING			+ HIGH IDLE		
ted speed rpm	: 1000		+ Ref. pressure + ALDA / ADA hPa		1100
f. pressure	. 1000		+ Rated speed rpm		2500
DA / ADA hPa	: 950		+ rack travel mm		8.70
ck travel mm	: -0.1		Tolerance mm		+-0.20
lerance mm				•	1-0.20
terance nun	. +-0.1	U	+ Del. quantity + cm3/1000 stroke		2/ 00
A C: IDEMENT				<b>:</b>	24.00
ASUREMENT			+ Tolerance		. 3.00
	4000		+ cm3/1000 stroke		+-2.00
ted speed rpm	: 1000		+ Check tolerance		. 7.60
f. pressure			+ cm3/1000s.	:	<del></del> 3.00
DA / ADA hPa			+ Spreed		
ck travel mm			+ Tolerance		
lerance mm	: +-0.1	0	+ cm3/1000 stroke	s :	2.50
			+ Check tolerance		
f. pressure			+ cm3/1000s.		3.00
DA / ADA hPa	: 750		+	-	
ck travel mm			<u> </u>		
lerance mm			STARTING FUEL D	TVE	<b>2</b> Y
LOT GRITO CHAIT		•		V L	**
			+ Rated speed rpm	:	100
			+ rack travel mm	•	£ U . 1U
DELIVERY CHA	PACTERISTI	rs	+ rack travel mm	:	20.10
EL DELIVERY CHA	RACTERISTI	cs	+ Del. quantity		
	RACTERISTI	cs	Del. quantity cm3/1000 stroke		
f. pressure		cs	Del. quantity cm3/1000 stroke Spreed		
f. pressure DA / ADA hPa	: 1100	cs	Del. quantity cm3/1000 strokes Spreed Tolerance	s :	52.00
f. pressure DA / ADA hPa ded speed rpm	: 1100	cs	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes	s :	52.00
f. pressure DA / ADA hPa ted speed rpm	: 1100 : 1800		Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	s :	52.00
f. pressure DA / ADA hPa Ted speed rpm The quantity B/1000 strokes	: 1100 : 1800		Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes	s :	52.00
f. pressure DA / ADA hPa ted speed rpm quantity B/1000 strokes Lerance	: 1100 : 1800 : 33.8		Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	s :	52.00
f. pressure DA / ADA hPa Ted speed rpm The quantity B/1000 strokes	: 1100 : 1800 : 33.8	0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	s :	52.00
f. pressure DA / ADA hPa ted speed rpm quantity B/1000 strokes Lerance	: 1100 : 1800 : 33.8 : +-0.8	o o	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	s :	52.00
f. pressure DA / ADA hPa Ted speed rpm quantity B/1000 strokes Lerance B/1000 strokes Leck tolerance	: 1100 : 1800 : 33.8 : +-0.8	o o	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	s :	52.00
f. pressure DA / ADA hPa Ded speed rpm DA / 1000 strokes DE A / 1000 strokes DE CE / 1000 strokes	: 1100 : 1800 : 33.8	o o	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	s :	52.00
f. pressure DA / ADA hPa Ded speed rpm DA / 1000 strokes DE A / 1000 strokes DE CE / 1000 str	: 1100 : 1800 : 33.8 : +-0.8	o o	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	s :	52.00
f. pressure DA / ADA hPa Ded speed rpm quantity B/1000 strokes Derance B/1000 strokes Deck tolerance B/1000s. Deed Derance	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	:	52.00 6.00 6.00
f. pressure DA / ADA hPa Deed speed rpm DA / 1000 strokes DEER TOOO strokes DEER TOOO strokes DEER TOOOS. DEER TOO	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000S.  LOW IDLE	:	52.00 6.00 6.00
f. pressure DA / ADA hPa Ded speed rpm DA / 1000 strokes DE A / 1000 strokes DE CA / 1000 strokes	: 1100 : 1800 : 33.8 : ←0.8 : ←1.8	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000S.  LOW IDLE  Rated speed rpm Del. quantity	:	52.00 6.00 6.00
f. pressure DA / ADA hPa Deed speed rpm DA / 1000 strokes DEER TOOO strokes DEER TOOO strokes DEER TOOOS. DEER TOO	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes	:	52.00 6.00 6.00
f. pressure DA / ADA hPa Ded speed rpm DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes DA (1000 strokes)	: 1100 : 1800 : 33.8 : ←0.8 : ←1.8	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance	:	52.00 6.00 6.00 375 7.80
f. pressure DA / ADA hPa Ded speed rpm L. quantity B/1000 strokes Deck tolerance B/1000s. Deed Derance B/1000s. Deed Derance B/1000s. Deck tolerance Deck to	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s.	:	52.00 6.00 6.00
f. pressure DA / ADA hPa Ted speed rpm L. quantity B/1000 strokes B/1000 strokes B/1000S. Teed Berance B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes B/1000 strokes	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed	:	52.00 6.00 6.00 375 7.80
f. pressure DA / ADA hPa Ted speed rpm L. quantity B/1000 strokes B/1000 strokes B/1000S. Teed B/1000 strokes	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance	:	52.00 6.00 6.00 375 7.80 +-2.30
f. pressure DA / ADA hPa Ted speed rpm L. quantity B/1000 strokes B/1000 strokes B/1000S. Teed Berance B/1000 strokes	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed	:	52.00 6.00 6.00 375 7.80
f. pressure DA / ADA hPa Ted speed rpm L. quantity B/1000 strokes B/1000 strokes B/1000S. Teed B/1000 strokes	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100	0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance	:	52.00 6.00 6.00 375 7.80 +-2.30
f. pressure DA / ADA hPa Ted speed rpm quantity B/1000 strokes Lerance B/1000s. Teed Lerance B/1000 strokes Eck tolerance B/1000 strokes Eck tolerance B/1000 strokes Eck tolerance B/1000s. The speed Lerance B/1000 strokes Eck tolerance B/1000s. The speed Lerance B/1000s. The speed rpm Leed speed rpm L	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100 : 2300	0 0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance	:	52.00 6.00 6.00 375 7.80 +-2.30
f. pressure DA / ADA hPa Ded speed rpm quantity B/1000 strokeserance B/1000 strokes Deck tolerance DECK	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100 : 2300	0 0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance	:	52.00 6.00 6.00 375 7.80 +-2.30
f. pressure DA / ADA hPa Ded speed rpm quantity B/1000 strokeserance B/1000 strokes Deck tolerance DECK	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100 : 2300 : 35.0	0 0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance	:	52.00 6.00 6.00 375 7.80 +-2.30
f. pressure DA / ADA hPa Ded speed rpm quantity B/1000 strokes Derance B/1000 strokes Deck tolerance DECK t	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100 : 2300 : 35.0	0 0 0 0	Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance	:	52.00 6.00 6.00 375 7.80 +-2.30
f. pressure DA / ADA hPa Ded speed rpm quantity B/1000 strokes Deck tolerance B/1000s. Deed Derance B/1000 strokes Deck tolerance B/1000 strokes Deck tolerance B/1000 strokes Deck tolerance DA / ADA hPa DEED Speed rpm Deed quantity B/1000 strokes DEED Strokes DEED Strokes DEED Strokes DEED Strokes DEED Strokes DEED Strokes DEED Strokes DEED Strokes DEED Strokes DEED Strokes DEED STROKES DEED STROK	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100 : 2300 : 35.0 : +-1.0		Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance	:	52.00 6.00 6.00 375 7.80 +-2.30
f. pressure DA / ADA hPa Ded speed rpm L. quantity B/1000 strokes Deck tolerance B/1000s. Deed Derance B/1000 strokes Deck tolerance B/1000 strokes Deck tolerance B/1000 strokes Deck tolerance DA / ADA hPa DEED SPEED RESURE DA / ADA hPa DEED SPEED RESURE DEED STROKES DEED STROK	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100 : 2300 : 35.0		Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance cm3/1000s.	:	52.00 6.00 6.00 375 7.80 +-2.30
f. pressure A / ADA hPa red speed rpm . quantity B/1000 strokes Rerance B/1000s. Reed Rerance B/1000 strokes Reck tolerance B/1000 strokes Reck tolerance B/1000s. Red pressure A / ADA hPa Red speed rpm Red speed rpm Red cuantity B/1000 strokes Rerance B/1000 strokes Reck tolerance B/1000 strokes Reck tolerance B/1000 strokes Rerance B/1000 strokes Rerance B/1000 strokes Rerance B/1000s. Red	: 1100 : 1800 : 33.8 : +-0.8 : +-1.8 : 2.5 : 3.0 : 1100 : 2300 : 35.0 : +-1.0		Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000S.  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000S. Spreed Check tolerance cm3/1000S.	: :	52.00 6.00 6.00 375 7.80 +-2.30 1.50
. pressure A / ADA hPa ed speed rpm . quantity /1000 strokes erance /1000s. eed erance /1000 strokes ck tolerance /1000 strokes ck tolerance /1000s pressure A / ADA hPa ed speed rpm eed . quantity /1000 strokes erance /1000 strokes erance /1000 strokes erance /1000 strokes erance /1000s.	: 1100 : 1800 : 33.8 : ←0.8 : ←1.8 : 2.5 : 3.0 : 1100 : 2300 : 4-1.0 : ←2.0		Del. quantity cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  LOW IDLE  Rated speed rpm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance cm3/1000s.	: :	52.00 6.00 6.00 375 7.80 +-2.30

control lever position degree : <46.5

SETTING PNEUMATIC FAST IDLE (PLA) (PLA) POSITION

control lever

position degree : 14.0 tolerance degree : +-2.0

Rated speed rpm : 425

9.00 Rack travel in mm : Tolerance mm : +-0.80 Vacuum hPa : -400

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 10.11.98 Edition Test oil : ISO 4113

Combination No. : 0 400 076 954G2

Injection pump

Pump designation : PES6M55C32ORS203 EP type number : 0 410 056 982

Governor

Governer design. : RSF315/2500M70-10 Governer no. : 0 420 021 175

Cust. part No. :

Customer-spec. information : MB-PKW Customer Motor : 0M606 Power KW : 100.

#### TEST BENCH REQUIREMENTS

Test oil inlet

: 40.0 temp. °C Tolerance °C +-2.0

Overflow valve : 1 469 990 351

Inlet press. bar : 1.00 Tolerance bar : +-0.1

Test nozzle holde

: 1 688 901 111 assembly

Opening pressure

: 148.50 bar Tolerance bar : +-1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter: 2.0

x length mm :

600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_

### BEGINNING OF DELIVERY

Test pressure bar : 26.00 Tolerance bar : +-1.0

Prestroke mm : 1.75 Tolerance mm : +-0.05 Check

tolerance mm : +-0.10

Rack travel in mm: 21.00 Tolerance mm : +-1.00

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

> : -300 : 0.80 : 1.00

Start of delivery blocking

°NW after s.o.d. : 16.50 Tolerance : +-0.20

Check

tolerance °NW : +-0.30

Barrel no. : 1

#### BASIC SETTING

Rated speed rpm : 1100

Rack travel in mm : 13.35 : +-0.05 Tolerance mm

Del. quantity

cm3/1000 strokes : 39.40

E18

Tolerance cm3/1000 strokes : +0.50Check tolerance cm3/1000s. : +-1.50 Spreed Tolerance cm3/1000 strokes : 2.50 Check tolerance cm3/1000s. 3.00 Rated speed rpm : 290 7.30 Rack travel in mm : Tolerance mm +-0.10 Del. quantity cm3/1000 strokes : 8.50 Tolerance cm3/1000 strokes : +-0.50 Spreed Tolerance cm3/1000 strokes : 1.00 (B) SETTING OF INJECTION PUMP WITH GOVERNOR IDLE STAGE Rack travel in mm : 6.25 Tolerance mm : +-0.25 FULL LOAD DELIVERY AT FULL LOAD STOP 1100 Rated speed rpm Ref. pressure ALDA / ADA hPa 1100 Del. quantity 39.40 cm3/1000 strokes : Tolerance +-0.50 cm3/1000 strokes : Check tolerance cm3/1000s.: +-1.50 Spreed Tolerance 2.50 cm3/1000 strokes : Check tolerance cm3/1000s. 3.00 RATED SPEED

Rated speed rpm : 3000 rack travel mm 1.00 Tolerance mm +-1.00 SET IDLE CONTROL LEVER POSITION : 1100 Rated speed rpm CRT mm max. : 1.95 LOW IDLE Setting point w/out bumper spring Rated speed rpm : 290 rack travel mm 7.30 SET IDLE AUXILIARY SPRING 400 Rated speed rpm : rack travel mm : 6.00 Tolerance mm +-0.10 Load pick-up rack travel mm >0.00 : Rated speed rpm : 1100 1.95 CRT mm max. rack travel mm 7.30 Rated speed rpm : 290 TORQUE CONTROL 1100 Rated speed rpm rack travel mm 13.35 Tolerance mm +-0.05 2000 Rated speed rpm rack travel mm 12.75 +-0.15 Tolerance mm Rated speed rpm 2500 12.25 rack travel mm +-0.15 Tolerance mm 500 Rated speed rpm 12.50 rack travel mm Tolerance mm +-0.15

ADJUSTMENT TEST ADA/ALDA

SETTING

Rated speed rpm :

Tolerance mm

2700

:

+-0.10

Rated speed rpm	:	1100	+ Tole	rance			
Ref. pressure			+ cm3/	1000 strokes	•	+-0.80	
ALDA / ADA hPa		ዕለብ		k tolerance	•	0.00	
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Tolerance mm	:	+-0.20	- → Del.	quantity			
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Check tolerance

cm3/1000s. : 1.50

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Rated speed rpm : 315

Rack travel in mm : 13.20 Tolerance mm : +0.70

Del. quantity

cm3/1000 strokes : 1.80

Del. quantity

cm3/1000 strokes : 34.00

Tolerance

cm3/1000 strokes : +-3.50

Rated speed rpm : 3000

Rack travel in mm : 1.00 Tolerance mm : +-1.00

Starting test

Rated speed rpm : 100

Del. quantity

cm3/1000 strokes : 1.80

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 21.10.98 Test oil : ISO 4113

Combination No. : 0 401 846 505

Injection pump

Pump designation : PE6P110A320RS483 EP type number : 0 411 816 159

Governor

Governer design. : RQV250...1200PA918

Governer no. : 0 421 813 772

Cust. part No. :

Customer-spec. information

Customer : VOLVO : TD71F; FQ, FAQ Motor

Power KW : 162.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C

40 : +- 2.0 Tolerance °C

Overflow valve : 2 417 413 096

Inlet press. bar : 1.5

Test nozzle holde

: 0 681 343 009 assembly

Opening pressure

: 173.5

Tolerance bar : +- 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter: 1.5 x Length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : + 1.0

Prestroke mm : 3.05
Tolerance mm : \*- 0.05

Check

tolerance mm : \*- 0.10

Rack travel in mm: 10.50 Tolerance mm : ★ 1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

: +- 0.50 Tolerance

Check

tolerance °NW : **←** 0.75

Start of delivery mark

Barrel no. : 1

BASIC SETTING

Del. quantity

cm3/1000 strokes : 128.0

Tolerance

cm3/1000 strokes : +- 1.0

Check tolerance

cm3/1000S. : +- 4.0

Spreed

Tolerance

cm3/1000 strokes : 4.0

	+ Rated speed rpm : 1330
Check tolerance cm3/1000s. : 7.5	Rack travel in mm : 16.50 Tolerance mm : +- 1.30
Rated speed rpm : 250	FULL LOAD DELIVERY AT FULL LOAD STOP
Rack travel in mm : 5.40 Tolerance mm : +- 0.10	Rated speed rpm : 700 Aneroid pressure
Del. quantity cm3/1000 strokes : 18.0	+ hPa : 900 - Del. quantity
Tolerance cm3/1000 strokes : +- 2.0	+ cm3/1000 strokes : 128.0 + Tolerance + cm3/1000 strokes : +- 1.0
Check tolerance cm3/1000s. : +- 5.0 Spreed	+ Check tolerance + cm3/1000s. : +- 4.0
Tolerance cm3/1000 strokes : 3.0	+ Spreed + Tolerance
Check tolerance cm3/1000s. : 6.0	- cm3/1000 strokes : 4.0 - Check tolerance
	- cm3/1000s. : 7.5
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	
	+ CONTROL LEVER +
GUIDE SLEEVE TRAVEL	control lever position degree : 113.0
Rated speed rpm : 1260 guide sleeve	tolerance degree : +- 4.0
travel mm : 7.80 Tolerance mm : +- 0.10	RATED SPEED : 11.30
Rated speed rpm : 250 guide sleeve	+ Rated speed rpm : 1245 + Tolerance 1/min : +- 5
travel mm : 1.20 Tolerance mm : + 0.10	rack travel mm : 4.00 Rated speed rpm : 1395
Rated speed rpm : 380	Tolerance 1/min : +- 15
guide sleeve travel mm : 2.45	rack travel mm : 0.50 Tolerance mm : +- 0.50
Tolerance mm : + 0.15	Rated speed rpm : 1500
Rated speed rpm : 500 guide sleeve	+
travel mm : 3.10 Tolerance mm : + 0.20	LOW IDLE
Rated speed rpm : 1400 - guide sleeve	t control lever
travel mm : 9.15 Tolerance mm : + 0.15	position degree : 60.0 tolerance degree : +- 4.0
GUIDE SLEEVE POSITION	Setting point w/out bumper spring
GOINE SECENE LOSITION	Rated speed rpm : 100
control lever position degree : -1	CRT mm min. : > 6.80

### Testing:

Rated speed rpm : 250 rack travel mm : 5.40 Tolerance mm : + 0.10

Rated speed rpm : 350

### ANEROID/ALTITUDE COMPENSATOR TEST

#### SETTING

Rated speed rpm : 500 Pressure hPa : 900 rack travel mm : 12.35 Tolerance mm : +- 0.05

Rated speed rpm : 500 Pressure hPa

#### **MEASUREMENT**

Rated speed rpm : 500

Pressure hPa : 270 rack travel mm : 0.30 Tolerance mm :  $\leftarrow$  0.10

Pressure hPa : 560 rack travel mm : 1.85 Tolerance mm : + 0.05

#### FUEL DELIVERY CHARACTERISTICS

Aneroid pressure

hPa Rated speed rpm : 700

Del. quantity

cm3/1000 strokes : 86.5

Tolerance

cm3/1000 strokes :  $\leftarrow$  1.5

Check tolerance

: +- 4.5 cm3/1000S.

### STARTING FUEL DELIVERY

Rated speed rpm : 100 rack travel mm : 20.50 Tolerance mm : + 0.50

Del. quantity

cm3/1000 strokes : 185.0

Tolerance

cm3/1000 strokes : +- 15.0

Check tolerance

cm3/1000s. : +- 19.0

LOW IDLE

Rated speed rpm : 250

Rack travel in mm : 5.40 Tolerance mm : +- 0.10

Del. quantity

cm3/1000 strokes : 18.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  2.0

Check tolerance cm3/1000s. : +- 5.0

Spreed Tolerance

cm3/1000 strokes : 3.0

Check tolerance

cm3/1000s. : 6.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 27.07.98 Edition : ISO 4113 Test oil

Combination No. : 0 402 046 875

Injection pump

Pump designation : PES6P110A320RS3329Z

EP type number : 0 412 016 744

Governor

Governer design. : RQV325...1250PA1251

Governer no. : 0 421 814 164

Cust. part No. : 1309376/3

Customer-spec. information

Customer : DAF

Motor : NS156M Power KW : 156.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet temp. °C : 40 Tolerance °C : + 2.0

Overflow valve : 1 417 413 000

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Overflow quantity

min. l/h : 160
Tolerance l/h : +- 20.0

Test nozzle holde

assembly : 1 688 901 101

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 600

REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 5.25Tolerance mm :  $\leftarrow 0.05$ 

Check

tolerance mm : +- 0.10

Rack travel in mm: 20.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance : **←** 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance :  $\leftarrow$  0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 1000

Rack travel in mm : 11.85

Tolerance mm : +- 0.05

	∔ guide sleeve
Del. quantity	travel mm : 3.02
cm3/1000 strokes : 144.0	Tolerance mm : +- 0.25
Tolerance	Rated speed rpm : 1510
cm3/1000 strokes : +- 1.0	guide sleeve
Chist table Strokes	+ travel mm : 13.50
Check tolerance cm3/1000s. : +- 4.0	+ Tolerance mm : + 0.50
<u> </u>	+
Spreed	GUIDE SLEEVE POSITION
Tolerance	+
cm3/1000 strokes : 8.0	+ control lever
	<pre> position degree : − 1  </pre>
Check tolerance	Rated speed rpm : 1370
cm3/1000s. : 12.0	+
	Rack travel in mm : 10.85
	Tolerance mm : +- 1.30
	Total arise man
Rated speed rpm : 325	
nateu speed (piii . 323	FULL LOAD DELIVERY AT FULL LOAD STOP
Rack travel in mm : 4.50	T TOLL LOAD DELIVERY AT FULL LOAD STOP
	Data damand many 1000
Tolerance mm : + 0.10	Rated speed rpm : 1000
Del. quantity	Aneroid pressure
cm3/1000 strokes : 26.0	+ hPa : 1500
Tolerance	+ Del. quantity
cm3/1000 strokes : +- 2.5	cm3/1000 strokes : 144.0
Check tolerance	+ Tolerance
cm $3/1000$ s. : +- 5.0	+ cm3/1000 strokes : +- 1.0
Spreed	+ Check tolerance
Tolerance -	+ cm3/1000s. : +- 4.0
cm3/1000 strokes : 4.0	+ Spreed
Check tolerance -	+ Tolerance
cm3/1000s. : 8.0 -	+ cm3/1000 strokes : 8.0
•	- Check tolerance
	cm3/1000s. : 12.0
(B) SETTING OF INJECTION PUMP -	1
WITH GOVERNOR -	1
	CONTROL LEVER
GUIDE SLEEVE TRAVEL	1
	control lever
Rated speed rpm : 1298	position degree : 123.0
guide sleeve	tolerance degree : + 4.0
travel mm : 10.25 -	L cotot unite degree
Tolerance mm : +- 0.15	RATED SPEED
Toterance min	rack travel mm : 10.85
Rated speed rpm : 325	Rated speed rpm : 1285
guide sleeve - travel mm : 1.25 -	+ Tolerance 1/min : +- 5 + Check
Tolerance mm : +- 0.20	speed 1/min : +- 10
Ontail around now 2/7	
Rated speed rpm : 863	rack travel mm : 4.00
guide sleeve	Rated speed rpm : 1360
travel mm : 5.41	Tolerance 1/min : + 15
Tolerance mm : + 0.25	Check
	├ speed 1/min : +- 20
Rated speed rpm : 520	†
,	rack travel mm : 0.50

Tolerance mm : +- 0.50 Rated speed rpm : 1500 LOW IDLE control lever position degree : 76.0 tolerance degree : +- 4.0 Setting point w/out bumper spring Rated speed rpm : 225 CRT mm min. :> 6.00Testing: 325 Rated speed rpm 4.50 rack travel mm : : + 0.10 Tolerance mm Rated speed rpm : 375 TORQUE CONTROL Rated speed rpm : 1000 rack travel mm : 11.85 Tolerance mm :  $\leftarrow$  0.05 700 Rated speed rpm : 11.85 rack travel mm : Tolerance mm : +- 0.10 Rated speed rpm : 1250 rack travel mm : 11.85
Tolerance mm : + 0.10 ANEROID/ALTITUDE COMPENSATOR TEST SETTING 600 Rated speed rpm 1500 Pressure hPa rack travel mm : 11.85 Tolerance mm :  $\leftarrow$  0.05 Rated speed rpm : 600 Pressure hPa 7.35 rack travel mm Tolerance mm : +- 0.20 **MEASUREMENT** 

Rated speed rpm : 600 Pressure hPa 370 rack travel mm 10.75 : +- 0.05 Tolerance mm Pressure hPa 200 : rack travel mm : 8,40 Tolerance mm : +- 0.10 FUEL DELIVERY CHARACTERISTICS Aneroid pressure 1500 Rated speed rpm 700 Del. quantity cm3/1000 strokes : 145.0 Tolerance cm3/1000 strokes : +- 3.0Check tolerance cm3/1000s. : +-6.0 rack travel mm : 11.85 Tolerance mm : +- 0.10 Aneroid pressure hPa Rated speed rpm : 1000 Del. quantity cm3/1000 strokes : 94.0 Tolerance cm3/1000 strokes : +- 1.0Check tolerance cm3/1000s. : +-3.5 LOW IDLE Rated speed rpm : 325 Rack travel in mm: 4.50 Tolerance mm :  $\leftarrow$  0.10 Del. quantity cm3/1000 strokes : 26.0 Tolerance cm3/1000 strokes : +- 2.5Check tolerance cm3/1000s. : +-5.0 Spreed Tolerance cm3/1000 strokes : 4.0

Check tolerance cm3/1000s.	:	8.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 22.06.98 Test oil : ISO 4113

Combination No. : 0 402 646 673

Injection pump

Pump designation : PE6P120A320RS7412 EP type number : 0 412 626 953

Governor

Governer design. : RQV275...1000PA1300K

Governer no. : 0 421 815 527

Cust. part No. : 1315099

Customer-spec. information Customer : DAF : XF 250 M Motor

Power KW 250.0

#### TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

temp. °C : 40 Tolerance °C : + 2.0 40

Overflow valve : 1 417 413 000

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Cverflow quantity

min. l/h : 150
Tolerance l/h : + 20.0

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0

x Length mm : 600

#### **REMARKS**

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

### BEGINNING OF DELIVERY

Test pressure bar : 15.0 Tolerance bar : +- 1.0

Prestroke mm : 4.45
Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

: 4

: 0-60-120-180-240 Phasing

: -300

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

### Start of delivery mark

Tolerance : + 0.10

Check

tolerance °NW : + 0.75

Barrel no. : 1

BASIC SETTING

Rated speed rpm : 750

Rack travel in mm	. 11 85	+ Rated speed rpm : 400
Tolerance mm		+ guide sleeve
, occ, and ocu		+ travel mm : 3.92
Del. quantity		† Tolerance mm : +- 0.25
cm3/1000 strokes	: 283.0	+
Talamanaa	<del></del>	Rated speed rpm : 1310
Tolerance cm3/1000 strokes	: + 1.0	⊥ guide sleeve ↓ travel mm : 13.50
CIIID7 1000 SEFORCS		+ Tolerance mm : + 0.50
Check tolerance		+
cm3/1000s.	: +- 4.0	+
Canad		+ GUIDE SLEEVE POSITION
Spreed		Ī
Tolerance		control lever
cm3/1000 strokes	: 5.0	position degree : - 1
		Rated speed rpm : 1181
Check tolerance	: 9.0	t Dool town in the control of the co
cm3/1000s.	; 9.U	Rack travel in mm : 10.00 Tolerance mm : + 2.00
		Total area min
		+
Rated speed rpm	: 275	+ FULL LOAD DELIVERY AT FULL LOAD STOP
Bash Americal de em	: 3.70	+ Rated speed rpm : 750
Rack travel in mm Tolerance mm		+ Rated speed rpm : 750 + Aneroid pressure
Del. quantity	0.10	+ hPa : 1500
cm3/1000 strokes	: 13.5	+ Del. quantity
Tolerance		+ cm3/1000 strokes : 283.0
	: <del>+</del> 3.0	+ Tolerance
Check tolerance cm3/1000S.	: +- 6.0	+ cm3/1000 strokes : + 1.0 + Check tolerance
Spreed	. += 0.0	- cm2/1000s. : +- 4.0
Tolerance		+ Spreed
cm3/1000 strokes	: 8.0	+ Tolerance
Check tolerance		+ cm3/1000 strokes : 5.0
cm3/1000s.	: 12.0	+ Check tolerance
		+ cm3/1000S. : 9.0
(B) SETTING OF IN.	JECTION PUMP	Ī
WITH GOVERNOR		+
		+ CONTROL LEVER
GUIDE SLEEVE TRAVE		+ control lever
OUTHE SPEENE LKHAR		+ position degree : 118.0
Rated speed rpm	: 1072	tolerance degree : + 4.0
guide sleeve		+
travel mm	: 10.16	+ RATED SPEED
Tolerance mm	: <del>+-</del> 0.15	+ rack travel mm : 10.50 + Rated speed rpm : 1045
Rated speed rpm	: 275	+ Ratea speed rpm : 1045 + Tolerance 1/min : +- 5
guide sleeve	. 217	+ Check
travel mm	: 2.04	speed 1/min : + 10
Tolerance mm	: <b>+</b> 0.20	+
Data da a d	704	+ rack travel mm : 4.00
Rated speed rpm	: 701	+ Rated speed rpm : 1140 + Tolerance 1/min : +- 15
guide sleeve travel mm	: 6.52	+ Check
Tolerance mm	: +- 0.25	speed 1/min : +- 20
	- · <del></del>	

rack travel mm Tolerance mm Rated speed rpm	: 0.70 : +- 0.70 : 1275
LOW IDLE	
control lever position degree tolerance degree	: 70.0 : + 4.0
Setting point w/o	ut bumper spring
Rated speed rpm	: 175
CRT mm min.	: > 6.30
Testing:	
Rated speed rpm rack travel mm Tolerance mm	: 275 : 3.70 : + 0.10
Rated speed rpm	: 310
TORQUE CONTROL Rated speed rpm rack travel mm Tolerance mm	: 750 : 11.85 : + 0.05
Rated speed rpm rack travel mm Tolerance mm	: 980 : 11.35 : ← 0.10
Rated speed rpm rack travel mm Tolerance mm	
Rated speed rpm rack travel mm Tolerance mm	: 700 : 11.75 : ← 0.10
Rated speed rpm rack travel mm Tolerance mm	: 600 : 11.20 : +- 0.10
Rated speed rpm rack travel mm Tolerance mm	: 500 : 10.80 : +- 0.10

### SETTING

Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 775 : 1500 : 11.85 : ← 0.05
Rated speed rpm Pressure hPa rack travel mm Tolerance mm	: 775 : - : 8.30 : + 0.20
MEASUREMENT	
Rated speed rpm	: 775
Pressure hPa	: 460
rack travel mm Tolerance mm	: 11.00 : + 0.05
	: 11.00

# FUEL DELIVERY CHARACTERISTICS

<del></del>				
Aneroid pressure	4500			
hPa Rated speed rpm	: 1500 : 980			
Del. quantity	2/5 0			
cm3/1000 strokes Tolerance	: 245.0			
cm3/1000 strokes	: <del>←</del> 2.0			
Check tolerance cm3/1000S. Spreed	: +- 5.0			
Tolerance cm3/1000 strokes	: 8.0			
Check tolerance cm3/1000s.	: 12.0			
rack travel mm Tolerance mm	: 11.50 : ← 0.10			
Aneroid pressure hPa Rated speed rpm	: -			
Del. quantity	. 333			
cm3/1000 strokes Tolerance	: 188.0			
cm3/1000 strokes	: +- 1.0			
Check tolerance cm3/1000s.	: +- 4.0			

# LOW IDLE

Rated speed rpm	:		275
Rack travel in mm Tolerance mm	:	+-	3.70 0.10
Del. quantity cm3/1000 strokes Tolerance	:		13.5
cm3/1000 strokes	:	+	3.0
Check tolerance cm3/1000s.	:	+-	6.0
Spreed Tolerance			
cm3/1000 strokes	:		8.0
Check tolerance cm3/1000S.	:		12.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 22.09.98 : ISO 4113

Combination No. : 0 402 648 932B

Injection pump

Pump designation : PE8P120A320LS7849 EP type number : 0 412 628 864

Governor

Governer design. : RQV300...1050PA1034

Governer no. : 0 421 813 993

Cust. part No. : 9274608

Customer-spec. information Customer : LIEBHERR
Motor : DOZOR TO : D 9308 TI Motor Power KW : 360.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

40 temp. °C : +- 2.0 Tolerance °C

Overflow valve : 1 417 413 025

inlet press. bar : 1.5
Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

: 208.5 bar Tolerance bar : + 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

x inside diameter : 3.0 x length mm : 1000

### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 4.55 Tolerance mm : + 0.05 Check

tolerance mm : + 0.10

Rack travel in mm : 10.50 Tolerance mm : + 1.50

Firing order : 1-8-7-2-6

: - 3- 5- 4

: 0-45-90-135-180 Phasing : -225-270-315

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

### BASIC SETTING

Rated speed rpm : 900

Rack travel in mm : 14.55 Tolerance mm : + 0.05

Del. quantity

cm3/1000 strokes : 264.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  1.0

Check tolerance

cm3/1000s. : +- 4.0

Spreed

Tolerance cm3/1000 strokes : 5.0	guide sleeve travel mm : 13.50 Tolerance mm : + 0.50
Check tolerance cm3/1000s. : 9.0	
	GUIDE SLEEVE POSITION
Rated speed rpm : 350 Del. quantity	+ control lever + position degree : - 1
cm3/1000 strokes : 24.5 Tolerance	Rated speed rpm : 1140
cm3/1000 strokes : +- 3.0 Check tolerance	+ Rack travel in mm : 13.50 + Tolerance mm : + 1.30
cm3/1000S. : +- 6.0 Spreed	<u> </u>
Tolerance cm3/1000 strokes : 6.0	FULL LOAD DELIVERY AT FULL LOAD STOP
Check tolerance cm3/1000S. : 10.0	Rated speed rpm : 900 Aneroid pressure
	+ hPa : 1500 + Del. quantity
(B) SETTING OF INJECTION PUMP WITH GOVERNOR	cm3/1000 strokes : 264.0 Tolerance
CUITATE OF EDITE TO AUG	cm3/1000 strokes : +- 1.0 Check tolerance
GUIDE SLEEVE TRAVEL	+ cm3/1000s. : + 4.0 + Spreed + Tolerance
Rated speed rpm : 1118 guide sleeve travel mm : 10.51	+ cm3/1000 strokes : 5.0 + Check tolerance
Tolerance mm : + 0.25	cm3/1000s. : 9.0
Rated speed rpm : 350 guide sleeve	<u> </u>
travel mm : 1.94 Tolerance mm : + 0.25	+ CONTROL LEVER
Rated speed rpm : 783	control lever position degree : 107.0
guide sleeve travel mm : 6.60	tolerance degree : +- 4.0
Tolerance mm : +- 0.25	+ RATED SPEED + rack travel mm : 13.50
Rated speed rpm : 356 guide sleeve	+ Rated speed rpm : 945 + Tolerance 1/min : +- 5
travel mm : 1.95 Tolerance mm : +- 0.25	+ + rack travel mm : 4.00
Rated speed rpm : 406	Rated speed rpm : 1085 Tolerance 1/min : +- 15
guide sleeve travel mm : 2.67	+ + rack travel mm : 0.70
Tolerance mm : +- 0.25	Tolerance mm : + 0.70 Rated speed rpm : 1300
Rated speed rpm : 490 guide sleeve	‡
travel mm : 3.59 Tolerance mm : + 0.25	
Rated speed rpm : 1320	LOW IDLE
	+

control lever

position degree : 81.0 tolerance degree : +- 4.0

Setting point w/out bumper spring

Rated speed rpm : 300

CRT mm min. : > 8.50

Testing:

rack travel mm : 2.00 Rated speed rpm : 460 Tolerance 1/min : +- 30

Rated speed rpm : 385

TORQUE CONTROL

Rated speed rpm : 900 rack travel mm : 14.55 Tolerance mm : +- 0.05

Rated speed rpm : 500 rack travel mm : 14.55 Tolerance mm : +- 0.05

ANEROID/ALTITUDE COMPENSATOR TEST

SETTING

Rated speed rpm : 550
Pressure hPa : 1400
rack travel mm : 14.55
Tolerance mm : + 0.05

Rated speed rpm : 550
Pressure hPa : rack travel mm : 11.75
Tolerance mm : + 0.10

**MEASUREMENT** 

Rated speed rpm : 550

Pressure hPa : 710
rack travel mm : 12.55
Tolerance mm : + 0.10

Pressure hPa : 860 rack travel mm : 13.75 Tolerance mm : + 0.05

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure
hPa : Rated speed rpm : 550
Del. quantity
cm3/1000 strokes : 220.5
Tolerance
cm3/1000 strokes : + 1.0
Check tolerance
cm3/1000s. : + 4.0
Spreed

Tolerance cm3/1000 strokes : 8.0

Check tolerance cm3/1000s. : 12.0

STARTING FUEL DELIVERY

ESS test: With 24 V solenoid activated, rack must reach start position in max. control lever setting.

Rated speed rpm : 100 rack travel mm : 20.50 Tolerance mm : +- 0.50 Del. quantity cm3/1000 strokes : 160.0 Tolerance cm3/1000 strokes : +- 10.0 Check tolerance cm3/1000s. : +- 14.0

LOW IDLE

Rated speed rpm : 350 Del. quantity cm3/1000 strokes : 24.5 Tölerance cm3/1000 strokes : +-3.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance cm3/1000s. : 10.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 30.04.98 : ISO 4113

Combination No. : 0 403 466 182

Injection pump

Pump designation : PES6MW100/120RS1247

EP type number : 0 413 406 248

Governor

Governer design. : RSV500...1100MW5A412

Governer no. : 0 420 085 303

Cust. part No. : 3935106

Customer-spec. information Customer : CDC Motor ∃ 6 CTA Power KW : 179.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

40 temp. °C : +- 2.0 Tolerance °C

Overflow valve : 2 417 413 093

Inlet press. bar : Tolerance bar :  $\leftarrow$  0.1

Test nozzle holde

: 1 688 901 101 assembly

Opening pressure

208.5 bar Tolerance bar : +- 1.5

Test lines : 1 680 750 014

Outside diameter : 6.0

x inside diameter : 2.0 x length mm :

### REMARKS

(A) INJECTION PUMP SETTING VALUES

Set equal delivery quant.

per values \_\_\_\_\_

# BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar : + 1.0

Prestroke mm : +-3.20 : +- 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm: 10.50 Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

: +- 0.50 Tolerance

Check

tolerance °NW : **←** 0.75

Start of delivery blocking

°NW after s.o.d. : 8.50 : +- 0.50 Tolerance

Check

tolerance "NW : +- 0.75

: 1 Barrel no.

Beginning of delivery differende

and maximum rack

15.00 travel Difference ° CS : 1.50

F09

	†
BASIC SETTING	governor spring pre-tension
Rated speed rpm : 1100	click setting x : 3.50
Rack travel in mm : 13.20 Tolerance mm : + 0.05	FULL LOAD DELIVERY AT FULL LOAD STOP Rated speed rpm : 1100
	Aneroid pressure
Del. quantity cm3/1000 strokes : 163.0	hPa : 1200 Del. quantity cm3/1000 strokes : 163.0
Tolerance cm3/1000 strokes : + 1.0	Tolerance + cm3/1000 strokes : +- 1.0 + Check tolerance
Check tolerance cm3/1000s. : +- 4.0	cm3/1000s. : +- 4.0 + Spreed + Tolerance
Spreed	cm3/1000 strokes : 4.0 Check tolerance
Tolerance cm3/1000 strokes : 4.0	+ cm3/1000s. : 7.5
Check tolerance cm3/1000s. : 7.5	CONTROL LEVER
Rated speed rpm : 500	control lever position degree : 109.0 tolerance degree : +- 4.0
·	+
Rack travel in mm : 5.35 Tolerance mm : ± 0.10	+ RATED SPEED + rack travel mm : 12.20
Del. quantity cm3/1000 strokes : 21.0	+ Rated speed rpm : 1170 + Tolerance 1/min : +- 5
Tolerance cm3/1000 strokes : #- 2.0 Check tolerance	+ Check + speed 1/min : +- 10
cm3/1000S. : +- 4.5 Spreed	rack travel mm : 4.00 Rated speed rpm : 1265
Tolerance cm3/1000 strokes : 3.5	+ Tolerance 1/min : +- 5 + Check
Check tolerance cm3/1000s. : 5.5	speed 1/min : +- 10
(B) SETTING OF INJECTION PUMP	+ rack travel mm : 1.00 + Tolerance mm : +- 0.70 + Rated speed rpm : 1350
WITH GOVERNOR	rack travel mm : 4.00
	Rated speed rpm : 1270 Tolerance 1/min : +- 15
GUIDE SLEEVE POSITION	+ Check + speed 1/min : +- 20
control lever position degree : - 3	<u> </u>
Rated speed rpm : 800	LOW IDLE
Rack travel in mm : 0.50 Tolerance mm : + 0.20	-

F10

control lever position degree : 85.0 tolerance degree : + 4.0 Control lever difference 21.0 Grad tolerance degree : +- 6.0 Setting point w/out bumper spring Rated speed rpm : 500 rack travel mm : 4.85 : **←** 0.10 Tolerance mm Rated speed rpm : 100 CRT mm min. : > 19.00Testing: Rated speed rpm : 500 rack travel mm : 5.35 Tolerance mm : + 0.10 TORQUE CONTROL Rated speed rpm : 1100 rack travel mm : 13.20 Tolerance mm : + 0.05 Rated speed rpm : 750 rack travel mm : 13.55 Tolerance mm : + 0.20 Rated speed rpm : 1000 rack travel mm : 13.55 Tolerance mm :  $\leftarrow$  0.20 ANEROID/ALTITUDE COMPENSATOR TEST SETTING Rated speed rpm : 500 Pressure hPa : 1200 Rated speed rpm : 500 Pressure hPa : rack travel mm : 11.05 : **←** 0.20 Tolerance mm **MEASUREMENT** 500 Rated speed rpm : 900 Pressure hPa : rack travel mm : 13.30

Tolerance mm : +- 0.20 Pressure hPa : 560 rack travel mm : 11.80 Tolerance mm : +- 0.20 FUEL DELIVERY CHARACTERISTICS Aneroid pressure hPa 1200 Rated speed rpm : 1000 Del. quantity cm3/1000 strokes : 170.5 Tolerance cm3/1000 strokes :  $\leftarrow$  2.0 Check tolerance cm3/1000s. : **←** 5.0 Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance 9.0 cm3/1000s. Aneroid pressure Rated speed rpm : 500 Del. quantity cm3/1000 strokes : 119.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 3.0 STARTING FUEL DELIVERY Rated speed rpm : 100 rack travel mm : 20.50
Tolerance mm : + 1.00 Del. quantity cm3/1000 strokes : 140.0 Tolerance cm3/1000 strokes : +- 10.0Check tolerance : +- 13.0 cm3/1000s. LOW IDLE Rated speed rpm : 500

Rack travel in mm : 5.35

Tolerance mm : +- 0.10

Del. quantity		
cm3/1000 strokes	:	21.0
Tolerance		
cm3/1000 strokes	: +-	2.0
Check tolerance		
cm3/1000S.	: +-	4.5
Spreed		
Tolerance		
cm3/1000 strokes	:	3.5
Check tolerance		
cm3/1000S.	:	5.5

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 15.09.95 : ISO 4113 Edition Test oil

Combination No. : 0 402 698 804

Injection pump

Pump designation : PE8P120A720LS7205 EP type number : 0 412 628 895

Governor

Governer design. : RE30

Governer no. : 0 421 890 007

Cust. part No. : 1328039

Customer-spec. information

: SCANIA Customer

Motor : DSC1409, DSC1416

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C 40 Tolerance °C : +- 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5 Tolerance bar : +- 0.1

Test nozzle holde

: 1 688 901 104 assembly

Opening pressure

251.5 Tolerance bar : +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0

x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 5.05 Tolerance mm : + 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  1.50

Firing order : 1-2-7-3-4

: - 5- 6- 8

Phasing : 0-45-90-135-180

: -225-270-315 : +- 0.50

Tolerance Check

tolerance °NW : **←** 0.75

Start of delivery mark

Tolerance : +- 0.10

Check

tolerance  $^{\circ}NW$  : +- 0.75

: 1 Barrel no.

Vibration

damper

(RoBo diaphragm) : 3.2

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0 Setting point (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Setting point (amua M) Uact V Uact ∀ : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 3.100 Check tolerance mm : +/- 0.10 Check value (m pump) : 1.700 Uact V CRT mm CRT mm : 5.50 Tolerance mm : +/- 0.25 5.50 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. CRT mm : 0.75 Tolerance mm : +/- 0.25

tolerance mm :  $\pm 1/-0.35$ Stop position (qmuq M) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm Starting position (amua M) Uact V : 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00 Tolerance mm :  $\leftarrow$  0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 Uact V 3.000 Del. quantity cm3/1000 strokes : 248.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +-Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 950 Uact V Del. quantity 3,000 cm3/1000 strokes : 224.0

Check

Tolerance cm3/1000 strokes	: +-	4.0
Check tolerance cm3/1000s.	: +-	6.0

# TEST POINT L1

Rated speed rpm Uact V Tolerance Volt	:	+-	250 1.410 0.060
Check tolerance Volt		+-	0.060
Del. quantity	•	•	0.000
cm3/1000 strokes	:		16.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		4.0
Check tolerance			8.0
CM 7/ II N K I V	•		~ 11

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 15.09.95 Test oil : ISO 4113

Combination No. : 0 402 698 806

Injection pump

Pump designation : PE8P12OA720LS7331

EP type number : 0 412 628 896

Governor

Governer design. : RE30

Governer no. : 0 421 890 022

Cust. part No. : 1362097

Customer-spec. information

Customer : SCANIA Motor

: DSC1409, DSC1416

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 104

Opening pressure

bar

: 251.5

Tolerance bar

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter :

2.0

x length mm :

600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : +- 1.0

Prestroke mm

5.50

Tolerance mm

: +- 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm: 10.50

Tolerance mm :  $\leftarrow$  1.50

Firing order

: 1-2-7-3-4

: - 5- 6- 8

Phasing

: 0-45-90-135-180

: -225-270-315

Tolerance

: **←** 0.50

Check

tolerance °NW

: +- 0.75

### Start of delivery mark

Tolerance

: +- 0.10

Check

tolerance °NW : +- 0.75

Barrel no.

: 1

Vibration damper

(RoBo diaphragm) : 3.2

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm CRT mm : 6.15
Tolerance mm : +/- 0.25 Check tolerance mm : +/-0.30Setting point (M pump) Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 3.100 Check tolerance mm :  $\pm -0.10$ Check value (m pump) : 1.700 Uact V CRT mm CRT mm : 5.50 Tolerance mm : +/- 0.25 5.50 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm Tolerance mm : +/- 0.25

tolerance mm :  $\pm -0.35$ Stop position (M pump) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm : 1,00 CRT mm 1,00 Starting position (amua M) : 4,500 Uact V Tolerance Volt : + 0,115 : 19,00 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 Uact V 3.000 Del. quantity cm3/1000 strokes : 248.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +-Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 950 Uact V : 3.000 Del. quantity cm3/1000 strokes : 224.0

Check

Tolerance		
cm3/1000 strokes	: <b>←</b>	4.0
Check tolerance		
cm3/1000s.	: ←	6.0

# TEST POINT L1

Rated speed rpm	:		250
Uact V	:		1.410
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Del. quantity			
cm3/1000 strokes	:		16.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		4.0
Check tolerance			
cm3/1000s.	:		8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 19.04.95 Edition : ISO 4113 Test oil

Combination No. : 0 402 196 703

Injection pump

Pump designation : PES6P120A720RS3184 EP type number : 0 412 026 727

Governor

Governer design. : RE24

Governer no. : 0 421 890 018

Cust. part No. : RE 57372

Customer-spec. information Customer : DEERE Motor : 6076 HRW35 Power KW : 181.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C 40 Tolerance °C : +- 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 101 assembly

Opening pressure

208.5 bar Tolerance bar :  $\leftarrow$  1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : x length mm :

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 3.60 Tolerance mm : + 0.05 Check tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.30

Check

tolerance °NW : +- 0.75

Start of delivery blocking

\*NW after s.o.d. : 10.50 Tolerance : +- 0.20 Check : +- 0.50

tolerance °NW

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) : 3.100 : 13.00 Uact V CRT mm : +/- 0.05 Tolerance mm Check : +/- 0.10 tolerance mm Check value (P, R and H pump) Uact V : 1.700 : 6.15 CRT mm : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Setting point (M pump) Uact V 3.100 CRT mm 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (M pump) 1.700 Uact V 5.50 CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in

stop position.

0.75

: +/- 0.25

tolerance mm :  $\pm -0.35$ Stop position (mpump) Uact V 0,720 Tolerance Volt :  $\leftarrow$  0,065 CRT mm 1,00 Starting position (amua M) : 4,500 Uact V Tolerance Volt : + 0,115 CRT mm : 19,00 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 1100 Uact V 2.710 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. FUEL DELIVERY CHARACTERISTICS Rated speed rpm 700 Uact V 2.710 Del. quantity cm3/1000 strokes : 142.0

CRT mm

Check

Tolerance mm

Tolerance		
cm3/1000 strokes	: +-	3.0
Check tolerance		
cm3/1000s.	: +-	6.0
Spreed		
Tolerance		
cm3/1000 strokes	:	8.0
Check tolerance		
cm3/1000s.	:	12.0

# TEST POINT L1

Rated speed rpm	:		425
Uact V	:		1.400
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Del. quantity			
cm3/1000 strokes	:		21.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		6.0
Check tolerance			
cm3/1000s.	:		10.0

# STARTING FUEL DELIVERY

Rated speed rpm	: 100
Uact V	: 4.600
Del. quantity	
cm3/1000 strokes	: 100.0
Tolerance	
cm3/1000 strokes	: +- 10.0
Check tolerance	
cm3/1000s.	: <b>←</b> 13.0

#### Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 27.09.95 Test oil : ISO 4113

Combination No. : 0 402 698 805

Injection pump

Pump designation : PE8P120A720LS7205

: -10

EP type number : 0 412 628 895

Governor

Governer design. : RE30

Governer no. : 0 421 890 019

Cust. part No. : 1361306

Customer-spec. information

Customer : SCANIA

Motor : DSC1409, DSC1416

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C : 40
Tolerance °C : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 104

Opening pressure

bar : 251.5 Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 5.05 Tolerance mm : + 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50 Tolerance mm : + 1.50

Firing order : 1-2-7-3-4

: - 5- 6- 8

Phasing : 0-45-90-135-180

: -225-270-315

Tolerance :  $\leftarrow$  0.50

Check

tolerance "NW :  $\leftarrow$  0.75

Start of delivery mark

Barrel no. : 1

Vibration

damper

(RoBo diaphragm) : 3.2

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

	+ CRT mm : 1,00
TESTING & SETTING RACK TRAVEL SENSOR POSITION	Starting position
Engine speed min-1: 0	(M pump)  + Uact V : 4,500  + Tolerance Volt : + 0,115  - CRT mm : 19,00
Setting point (P, R and H pump)	- CRT mm : 19,00 - Tolerance mm : +- 0,80
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.75 Check tolerance mm : +/- 0.10	ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps)  Test with control rod
Check value (P, R and H pump)	in stop position
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check	Engine speed min-1: 60  Amplitude V : 1.4  Tolerance V : +/- 0.6  Check  tolerance V : +/- 1.20
tolerance mm : +/- 0.30	Engine speed min-1: 600 Difference
Setting point (M pump)	+ Amplitude to + Amplitude V : max.1.4 +
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05	(C) INJECTION PUMP WITH POSITIONER
Check tolerance mm : +/- 0.10	TEST POINT V1
Check value (M pump)	Rated speed rpm : 700 Uact V : 3.000 Del. quantity
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25	+ cm3/1000 strokes : 248.0 + Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance
Check tolerance mm : +/- 0.30	cm3/1000s. : +- 4.0 Spreed
Stop position (P, R and H pump)	Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000S. : 12.0
Uact V : Value with deenergised adjusting magnet and control rod in	FUEL DELIVERY CHARACTERISTICS
stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25	Rated speed rpm : 950 Uact V : 3.000 Del. quantity
Check tolerance mm : +/- 0.35	- cm3/1000 strokes : 224.0 - Tolerance - cm3/1000 strokes : +- 4.0
Stop position (M pump) Uact V : 0,720	Check tolerance cm3/1000s. : +- 6.0
Tolerance Volt : + 0,065	TEST POINT L1

Rated speed rpm Uact V	: 250 : 1.410
Tolerance Volt	: +- 0.060
Check tolerance Volt	: +- 0.060
Del. quantity cm3/1000 strokes	: 16.0
Tolerance cm3/1000 strokes Spreed	: ← 3.0
Tolerance cm3/1000 strokes	: 4.0
Check tolerance cm3/1000s.	: 8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 02.02.96 : ISO 4113

Combination No. : 0 402 896 009

Injection pump

Pump designation : PE6P120A320RS8020

EP type number : 0 412 826 021

Governor

Governer design. : RE30

Governer no. : 0 421 890 010

Cust. part No. : 479889-P03 V.08/95

Customer-spec. information

Customer : VOLVO—TRUCK

Motor

: TD123,TD103 E ES

Power KW

: 290.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C

Tolerance °C : +- 2.0

Overflow valve : 2 417 413 078

Inlet press. bar :

2.5

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 103

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

F25

x inside diameter: 2.0 x length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar: 31.0 Tolerance bar : + 1.0

Prestroke mm : 4.05 Tolerance mm : + 0.05

tolerance mm : + 0.10

Rack travel in mm : 10.50

Tolerance mm : + 0.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance : <del>←</del> 0.50

Check

tolerance °NW : <del>←</del> 0.75

Start of delivery mark

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION

Engine speed min-1: 0

Setting point (P, R and H pump)		
Uact V CRT mm Tolerance mm Check	: : : +/-	3.100 13.00 - 0.05
tolerance mm	: +/-	- 0.10
Check value (P, R and H pump)		
Uact V CRT mm Tolerance mm Check tolerance mm	: : +/-	1.700 6.15 0.25 0.30
Setting point (M pump)		
Uact V CRT mm Tolerance mm Check tolerance mm	:	3.100 12.50 0.05
Check value (M pump)		
Uact V CRT mm Tolerance mm Check tolerance mm	: : +/-	1.700 5.50 0.25 0.30
Stop position (P, R and H pump)		
Uact V deener	rgised and	ue with adjusting magnet control rod in p position.
CRT mm Tolerance mm	:	0.75 0.25
Check tolerance mm	: +/-	
Stop position (M pump) Uact V Tolerance Volt CRT mm	: : +-	0,720 0,065 1,00
Starting position (M pump) Uact V	:	4,500

Tolerance Volt : +- 0,115 CRT mm : 19,00 Tolerance mm : +- 0,80
ENGINE—SPEED SENSOR (All P and R pumps not H and M pumps)
Test with control rod in stop position
Engine speed min-1: 60 Amplitude V: 1.4 Tolerance V: +/- 0.6 Check tolerance V: +/- 1.20
Engine speed min-1: 600
Difference
Amplitude to Amplitude V : max.1.4
(C) INJECTION PUMP WITH POSITIONER
TEST POINT V1
Rated speed rpm : 600 Uact V : 2.800
Uact V : 2.800 Del. quantity cm3/1000 strokes : 302.0
Uact V : 2.800 Del. quantity
Uact V : 2.800 Del. quantity cm3/1000 strokes : 302.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance
Uact V : 2.800  Del. quantity  cm3/1000 strokes : 302.0  Tolerance  cm3/1000 strokes : + 1.0  Check tolerance  cm3/1000s. : + 4.0  Spreed
Uact V : 2.800  Del. quantity  cm3/1000 strokes : 302.0  Tolerance  cm3/1000 strokes : + 1.0  Check tolerance  cm3/1000s. : + 4.0  Spreed  Tolerance  cm3/1000 strokes : 8.0
Uact V : 2.800  Del. quantity  cm3/1000 strokes : 302.0  Tolerance  cm3/1000 strokes : + 1.0  Check tolerance  cm3/1000s. : + 4.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance  cm3/1000s. : 11.0
Uact V : 2.800  Del. quantity cm3/1000 strokes : 302.0  Tolerance cm3/1000 strokes : + 1.0  Check tolerance cm3/1000s. : + 4.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance
Uact V : 2.800  Del. quantity cm3/1000 strokes : 302.0  Tolerance cm3/1000 strokes : + 1.0  Check tolerance cm3/1000s. : + 4.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 11.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950
Uact V : 2.800  Del. quantity cm3/1000 strokes : 302.0  Tolerance cm3/1000 strokes : + 1.0  Check tolerance cm3/1000s. : + 4.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 11.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 2.800  Del. quantity
Uact V : 2.800  Del. quantity cm3/1000 strokes : 302.0  Tolerance cm3/1000 strokes : ← 1.0  Check tolerance cm3/1000s. : ← 4.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 11.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950 Uact V : 2.800  Del. quantity cm3/1000 strokes : 258.0  Tolerance
Uact V : 2.800  Del. quantity cm3/1000 strokes : 302.0  Tolerance cm3/1000 strokes : + 1.0  Check tolerance cm3/1000s. : + 4.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 11.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 2.800  Del. quantity cm3/1000 strokes : 258.0  Tolerance cm3/1000 strokes : + 3.0  Check tolerance
Uact V : 2.800  Del. quantity cm3/1000 strokes : 302.0  Tolerance cm3/1000 strokes : + 1.0  Check tolerance cm3/1000s. : + 4.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 11.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 2.800  Del. quantity cm3/1000 strokes : 258.0  Tolerance cm3/1000 strokes : + 3.0  Check tolerance cm3/1000s. : + 6.0  Spreed
Uact V : 2.800  Del. quantity cm3/1000 strokes : 302.0  Tolerance cm3/1000 strokes : + 1.0  Check tolerance cm3/1000s. : + 4.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 11.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 2.800  Del. quantity cm3/1000 strokes : 258.0  Tolerance cm3/1000 strokes : + 3.0  Check tolerance cm3/1000s. : + 6.0  Spreed  Tolerance cm3/1000 strokes : 10.0
Uact V : 2.800  Del. quantity cm3/1000 strokes : 302.0  Tolerance cm3/1000 strokes : + 1.0  Check tolerance cm3/1000s. : + 4.0  Spreed  Tolerance cm3/1000 strokes : 8.0  Check tolerance cm3/1000s. : 11.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 2.800  Del. quantity cm3/1000 strokes : 258.0  Tolerance cm3/1000 strokes : + 3.0  Check tolerance cm3/1000s. : + 6.0  Spreed  Tolerance

Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 950 : 2.200 : 183.0 : ← 3.0 : ← 6.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreæd Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 16.02.96 Test oil : 16.02.96

Combination No. : 0 402 796 821

Injection pump

Pump designation : PES6P120A720RS7407 EP type number : 0 412 726 955

Governor

Governer design. : RE30

Governer no. : 0 421 890 017

Cust. part No. : RE 67492

Customer-spec. information

Customer : DEERE Motor

: 6101HZ013

Power KW : 260.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 103

Opening pressure

bar

208.5

Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

F28

x inside diameter: 3.0

x length mm :

600

REMARKS

Pump-specific values in Section (B)

must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar: 17.0

Tolerance bar : +- 1.0

Prestroke mm : 3.60 Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm: 10.50

Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

Start of delivery blocking

°NW after s.o.d. : 9.25 Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack

travel

15.00

Difference ° CS : 3.75

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0 Setting point (P, R and H pump) : 3.100 : 13.00 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Setting point (M pump) Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (amua M) : 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm Tolerance mm :  $\pm - 0.25$ 

tolerance mm :  $\pm -0.35$ Stop position (amua M) Uact V : 0,720 Tolerance Volt : ← 0,065 CRT mm : 1,00 Starting position (M pump) : 4,500 Uact V Tolerance Volt : +- 0,115 CRT mm : 19,00 Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 1050 : 3.030 Uact V Del. quantity cm3/1000 strokes : 213.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. 2.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 700 Del. quantity 3.120 cm3/1000 strokes : 237.0

Check

Tolerance	
cm3/1000 strokes	: +- 3.0
Check tolerance	
cm3/1000S.	: <del></del> 6.0
Spreed	
Tolerance	
cm3/1000 strokes	: 8.0
Check tolerance	
cm3/1000S.	: 12.0
TEST POINT L1	
0-41	. /50
Rated speed rpm	: 450
Uact V	: 1.740
Tolerance Volt	: +- 0.060
Check tolerance	
Volt	: +- 0.060
Del. quantity	
cm3/1000 strokes	: 26.0

3.0

Spreed Tolerance

Tolerance

cm3/1000 strokes : 6.0 Check tolerance

cm3/1000s. : 10.0

# STARTING FUEL DELIVERY

cm3/1000 strokes : +-

Rated speed rpm : 100
Uact V : 4.550
Del. quantity
cm3/1000 strokes : 120.0
Tolerance
cm3/1000 strokes : +- 20.0
Check tolerance

cm3/1000s. : +- 25.0

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#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

**Fdition** Test oil

: 15.09.95 : ISO 4113

Combination No. : 0 402 696 801

Injection pump

Pump designation : PE6P120A720RS7211

: -10

EP type number : 0 412 626 931

Governor

Governer design. : RE30

Governer no. : 0 421 890 009

Cust. part No. : 1328037

Customer-spec. information Customer : SCANIA

Motor : DTC1102, DSC1170

#### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 1 417 413 025

Inlet press. bar :

2.5

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 104

Opening pressure

har

251.5

Tolerance bar

: +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

G03

x inside diameter : 2.0 x length mm : 600

REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm

: 5.05

Tolerance mm

: +- 0.05

Check

tolerance mm

: +- 0.10

Rack travel in mm : 10.50 Tolerance mm : + 1.50

Firing order

: 1-5-3-6-2-

Phasing

: 0-60-120-180-240

: -300

Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

Start of delivery mark

Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

Barrel no.

: 1

Vibration

damper

(RoBo diaphragm) : 3.1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) : 3.100 : 13.00 Uact V CRT mm Tolerance mm : +/- 0.05 Check : +/- 0.10 tolerance mm Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Setting point (amua M) : Uact V 3.100 CRT mm : 12.50 Toterance mm : +/- 0.05 12.50 Check tolerance mm : +/- 0.10 Check value (M pump) : 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in stop position.

: 0.75

Tolerance mm : +/- 0.25

tolerance mm :  $\pm -0.35$ Stop position (M pump) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm : 1,00 Starting position (M pump) : 4,500 Uact V Tolerance Volt : + 0,115 : 19,00 CRT mm : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 700 Rated speed rpm : Uact V 3.000 Del. quantity cm3/1000 strokes : 248.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance : +- 4.0 cm3/1000s. Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 950 Uact V 3.000 Del. quantity cm3/1000 strokes : 224.0

CRT mm

Check

Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: ← 4.0 : ← 6.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance	
cm3/1000 strokes Spreed Tolerance	: +- 3.0
Check tolerance	: 4.0
cm3/1000s.	: 8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 15.09.95

Test oil

: ISO 4113

Combination No. : 0 402 696 803

Injection pump

Pump designation : PE6P120A720RS7211

EP type number : 0 412 626 838

Governor

Governer design. : RE30

Governer no. : 0 421 890 019

Cust. part No. : 1370681

Customer—spec. information

Customer

: SCANIA

Motor

: DSC1122,DTC1102

# TEST BENCH REQUIREMENTS

Inlet line

: 4.1

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 1 417 413 025

Inlet press. bar :

2.5

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 104

Opening pressure

bar

251.5

Tolerance bar

Test lines

: 1 680 750 008

Outside diameter : 6.0

G06

x inside diameter :

x length mm

2.0

REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm 5.05 : + 0.05

Tolerance mm Check

tolerance mm : + 0.10

Rack travel in mm: 10.50

Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

> : -300 : +- 0.50

Tolerance

Check

tolerance °NW

: + 0.75

Start of delivery mark

Tolerance : + - 0.50

Check

tolerance "NW : +- 0.75

Barrel no.

: 1

Vibration

damper

(RoBo diaphragm) : 3.1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0 Setting point - (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 3.100 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Uact V : 1.700 · 6.15 6.15 CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Setting point (mpump) : 3.100 : 12.50 Uact V CRT mm Tolerance mm :  $\pm - 0.05$ Check tolerance mm : +/- 0.10 Check value (amua M) : 1.700 Uact V CRT mm 5.50 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in

stop position.

0.75

: +/- 0.25

tolerance mm :  $\pm 1/-0.35$ Stop position (amua M) vact V : 0,720
Tolerance Volt : + 0,065
CRT mm CRT mm 1,00 Starting position (dmpq M) Uact V : 4,500 Tolerance Volt : + 0,115 : 19,00 CRT mm Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 3.000 Del. quantity cm3/1000 strokes : 248.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance : +- 4.0 cm3/1000S. Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0 FUEL DELIVERY CHARACTERISTICS 950 Rated speed rpm : Uact V 3.000 Del. quantity cm3/1000 strokes : 224.0

Check

CRT mm

Tolerance mm

Tolerance		
cm3/1000 strokes	: +-	4.0
Check tolerance		
cm3/1000s.	: +-	6.0

# TEST POINT L1

Rated speed rpm Uact V	:		250 1.410
Tolerance Volt Check tolerance	:	+	0.060
Volt	:	+-	0.060
Del. quantity			44.0
cm3/1000 strokes Tolerance	:		16.0
cm3/1000 strokes Spreed	:	+-	3.0
Tolerance			
cm3/1000 strokes	:		4.0
Check tolerance cm3/1000s.	:		8.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 15.09.95 : ISO 4113

Combination No. : 0 402 696 804

Injection pump

Pump designation : PE6P120A720RS7355 EP type number : 0 412 626 933

Governor

Governer design. : RE30

Governer no. : 0 421 890 022

Cust. part No. : 1370672

Customer-spec. information

Customer : SCANIA

Motor

: DSC1122,DTC1102

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 104

Opening pressure

bar

: 251.5

Tolerance bar : +- 1.5

Test Lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0

x length mm :

600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

## BEGINNING OF DELIVERY

rest pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 5.05
Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50

Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Vibration

damper

(RoBo diaphragm) : 3.1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V : 3.100 : 13.00 CRT mm : +/- 0.05 Tolerance mm Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm : +/~ 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Setting point (amua M) Uact V 3,100 CRT mm 12.50 Tolerance mm :  $\pm - 0.05$ Check tolerance mm :  $\pm -0.10$ Check value (qmuq M) 1.700 Uact V 5.50 CRT mm : +/- 0.25 Tolerance mm Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm

: +/- 0.25

tolerance mm :  $\pm -0.35$ Stop position (M pump) Uact V 0,720 Tolerance Volt : + 0,065 CRT mm 1,00 Starting position (M pump) 4,500 Uact V Tolerance Volt : + 0,115CRT mm 19,00 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 Uact V 3.000 Del. quantity cm3/1000 strokes : 248.0 Tolerance cm3/1000 strokes : +- 1.0Check tolerance cm3/1000s. 4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0 FUEL DELIVERY CHARACTERISTICS 950 Rated speed rpm Uact V 3.000 Del. quantity cm3/1000 strokes : 224.0

Check

Tolerance mm

Tolerance cm3/1000 strokes	: +-	4.0
Check tolerance cm3/1000s.	: +-	6.0

# TEST POINT L1

Rated speed rpm	:		250
Uact V	:		1.410
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.960
Del. quantity			
cm3/1000 strokes	:		16.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		4.0
Check tolerance			
cm3/1000s.	:		8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 15.09.95 : ISO 4113

Combination No. : 0 402 698 802

Injection pump

Pump designation : PE8P120A920/4LS7149

EP type number : 0 412 628 826

Governor

Governer design. : RE30

Governer no. : 0 421 890 007

Cust. part No. : 397567

Customer-spec. information Customer : SCANIA Motor : DSC1404

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

40 temp. °C Tolerance °C : +- 2.0

Overflow valve : 1 417 413 025.

Inlet press. bar : 1.5 Tolerance bar : +- 0.1

Test nozzle holde

: 1 688 901 019 assembly

Opening pressure

: 208.5 bar Tolerance bar

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter: 3.0 x Length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery

under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm 5.05 : +- 0.05 Tolerance mm

Check

tolerance mm : +- 0.10

Rack travel in mm: 10.50 Tolerance mm : **←** 1.50

Firing order : 1-2-7-3-4

: - 5- 6- 8

Phasing : 0-45-90-135-180 : -225-270-315

Tolerance : +- 0.50

Check

tolerance °NW : **←** 0.75

Start of delivery mark

Tolerance : + - 0.50

Check

: +- 0.75 tolerance °NW

: 1 Barrel no.

Vibration

damper

(RoBo diaphragm) : 3.2

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 3.100 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Check tolerance mm :  $\pm -0.30$ Setting point (amua M) : 3.100 : 12.50 Uact V CRT mm Tolerance mm :  $\pm -0.05$ Check tolerance mm : +/- 0.10 Check value (M pump) : 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet

and control rod in stop position.

0.75

: +/- 0.25

Stop position (M pump) : 0,720 Uact V Tolerance Volt : + 0,065 1,00 CRT mm Starting position (M pump) Uact V : 4,500 Tolerance Volt : +- 0,115 CRT mm : 19,00 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : Uact V : 700 3.180 Del. quantity cm3/1000 strokes : 227.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance : **←** 4.0 cm3/1000s. Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance cm3/1000s. 9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 950 Uact V : Del. quantity 3.180 cm3/1000 strokes : 220.0

tolerance mm :  $\pm -0.35$ 

CRT mm

Check

Tolerance mm

Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: +- 4.0 : +- 6.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes	: 250 : 1.600 : ← 0.060 : ← 0.060 : 18.0
Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes	
Check tolerance	: 6.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition

: 05.03.96

Test oil

: ISO 4113

Combination No. : 0 402 796 820

Injection pump

Pump designation : PES6P120A720LS7410

EP type number : 0 412 726 957

Governor

Governer design. : RE30

Governer no. : 0 421 890 038

Cust. part No. : 0260744902

Customer-spec. information

Customer : MTU

Motor

: 6-R-183

Power KW : 441.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

Tolerance °C

: +- 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 1.5

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

208.5

Tolerance bar

: <del>+-</del> 1.5

Test lines : 1 680 750 075

Outside diameter : 8.0

**REMARKS** 

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

x inside diameter: 3.0 x length mm : 1000

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar :

Tolerance bar : + 1.0

Prestroke mm : 4.05Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 20.00

Tolerance mm : + 1.00

: 6-2-4-1-5-Firing order

Phasing : 0-60-120-180-240

: -300

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Start of delivery mark

Barrel no. : 6

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-1: 0

Setting point (P, R and H pump)
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check
tolerance mm : +/- 0.10
Check value (P, R and H pump)
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25
Check tolerance mm : +/- 0.30
Setting point (M pump)
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05
Check tolerance mm : +/- 0.10
Check value (M pump)
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check
tolerance mm : +/- 0.30
Stop position (P, R and H pump)
Uact V: Value with deenergised adjusting magnet and control rod in stop position.
CRT mm : 0.75 Tolerance mm : +/- 0.25 Check
tolerance mm : +/- 0.35
Stop position (M pump) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm : 1,00
Starting position (M pump)

: 4,500

Tolerance Volt : ← 0,115 CRT mm : 19,00 Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60Amplitude V : 1.4Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 1150 : 3.500 Uact V Del. quantity cm3/1000 strokes : 362.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance cm3/1000s. 10.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 750 3.500 Uact V Del. quantity cm3/1000 strokes : 428.0 Tolerance cm3/1000 strokes : +- 4.0Check tolerance cm3/1000s. : <del>+-</del> 6.0 TEST POINT L1 Rated speed rpm : 350 Uact V : 1.340

Tolerance Volt : +- 0.060

Uact V

Del. quantity
cm3/1000 strokes : 25.0
Tolerance
cm3/1000 strokes : + 3.0
Spreed
Tolerance
cm3/1000 strokes : 8.0
Check tolerance
cm3/1000s. : 12.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 15.09.95 : ISO 4113

Combination No. : 0 402 896 004

Injection pump

Pump designation : PE6P120A720RS8010

EP type number : 0 412 826 014

Governor

Governer design. : RE30

Governer no. : 0 421 890 009

Cust. part No. : 1328145

Customer-spec. information

Customer : SCANIA

Motor

: DSC1127

#### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

Tolerance °C

Overflow valve : 1 417 413 025

2.5

Inlet press. bar : Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 104

Opening pressure

bar

: 251.5

Tolerance bar

: **←** 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x length mm :

x inside diameter: 2.0

600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 2.85
Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm: 10.50

Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

Phasing

: 0-60-120-180-240

: -300

Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

#### Start of delivery mark

Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

Barrel no.

: 1

Vibration

damper

(RoBo diaphragm) : 3.1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0 Setting point (P, R and H pump) Uact V 3.100 : 13.00 CRT mm Tolerance mm :  $\pm - 0.05$ Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Uact V 1.700 CRT mm 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Setting point (m pump) Uact V 3.100 CRT mm 12.50 Tolerance mm :  $\pm - 0.05$ Check : +/- 0.10 tolerance mm Check value (amua M) : 1.700 Uact V 5.50 CRT mm Tolerance mm :  $\pm - 0.25$ Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in stop position.

0.75

: +/- 0.25

tolerance mm :  $\pm -0.35$ Stop position (M pump) Uact V 0,720 Tolerance Volt : ← 0,065 CRT mm 1,00 Starting position (M pump) Uact V 4,500 Tolerance Volt : + 0,115: 19,00 CRT mm Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 Uact V 3.500 Del. quantity cm3/1000 strokes : 332.0 Tolerance cm3/1000 strokes : +- 1.0Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. FUEL DELIVERY CHARACTERISTICS 900 Rated speed rpm Uact V 3.500 Del. quantity cm3/1000 strokes : 301.0

CRT mm

Check

Tolerance mm

Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	: ← 4.0 : ← 6.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance	_
cm3/1000 strokes Spreed Tolerance cm3/1000 strokes	
Check tolerance cm3/1000s.	: 8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 15.09.95 : ISO 4113

Combination No. : 0 402 896 013

Injection pump

Pump designation : PE6P120A720RS8025 EP type number : 0 412 826 026

Governor

Governer design. : RE30

Governer no. : 0 421 890 019

Cust. part No. : 1361124

Customer-spec. information Customer : SCANIA : DSC1124 Motor

#### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

40 temp. °C : +- 2.0 Tolerance °C

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 104 assembly

Opening pressure

: 251.5 bar Tolerance bar :  $\leftarrow$  1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x Length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm 2.85 : +- 0.05 Tolerance mm

Check

: **←** 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm : + 1.50

: 1-5-3-6-2-Firing order

: 0-60-120-180-240 Phasing

: -300

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Start of delivery mark

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Vibration

damper

(RoBo diaphragm) : 3.1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) : 3.100 : 13.00 Uact V 3.100 CRT mm Tolerance mm : +/- 9.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 Uact V CRT mm 6.15 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm$  +/- 0.30 Setting point (M pump) : 3.100 : 12.50 Uact V 3.100 CRT mm Tolerance mm :  $\pm -0.05$ Check tolerance mm : +/- 0.10 Check value (dmuq M) Uact V 1.700 5.50 CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/-0.30Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. CRT mm 0.75 : +/- 0.25 Tolerance mm

tolerance mm :  $\pm -0.35$ Stop position (dmuq M) Uact V 0,720 Tolerance Volt :  $\leftarrow$  0,065 CRT mm : 1,00 Starting position (dmuq M) Uact V 4,500 Tolerance Volt : +- 0,115 : 19,00 CRT mm Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 Uact V 3.500 Del. quantity cm3/1000 strokes : 340.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm 900 Uact V 3.500 Del. quantity cm3/1000 strokes : 309.0

Check

Tolerance cm3/1000 strokes	: +-	4.0
Check tolerance cm3/1000s.	: +-	6.0

# TEST POINT L1

Rated speed rpm	:	250
Uact V	:	1.640
Tolerance Volt	: +	- 0.060
Check tolerance		
Volt	: +	- 0.060
Del. quantity		
cm3/1000 strokes	:	16.0
Tolerance		
cm3/1000 strokes	: +	- 3.0
Spreed		
Tolerance		
cm3/1000 strokes	:	4.0
Check tolerance		
cm3/1000S.	:	8.0

## STARTING FUEL DELIVERY

Rated speed rpm	:	100
Uact V	:	3.000
Del. quantity		
cm3/1000 strokes	:	245.0
Tolerance		
cm3/1000 strokes	: +	- 20.0
Check tolerance		
cm3/1000s	• +-	- 24 N

Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 29.03.96 : ISO 4113

Combination No. : 0 402 795 204

Injection pump

Pump designation : PES5H120/720/3LS1004

: -1

EP type number : 0 412 725 204

Governor

Governer design. : RE33

Governer no. : 0 421 890 364

Cust. part No. : 51.111103-7538

Customer-spec. information

Customer : MAN

Motor

: D 2865 LF 09

Power KW : 250.0

TEST BENCH REQUIREMENTS

Inlet line : 4-unten

Test oil inlet

temp. °C

40

Tolerance °C

2.0

Overflow valve : 2 417 413 082

Inlet press. bar :

3.0

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

: 208.5

Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter :

3.0

x length mm : 600

REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar :

Tolerance bar : + 1.0

Prestroke mm : 10.00 Tolerance mm : + 0.05

Check

tolerance mm : + 0.10

Rack travel in mm: 10.50

Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-3-5-4-2

: 0-72-144-216-288

Phasing Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

Start of delivery blocking

Barrel no. :

(B) POSITIONER TESTING

Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

**POSITION** 

Engine speed min-1: 0

Setting point (P, R and H pump)	+ CRT mm : 19,00 + Tolerance mm : +- 0,80
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10	ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps)  Test with control rod
Check value (P, R and H pump)	in stop position  Engine speed min-1: 60
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check	Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20
tolerance mm : +/- 0.30	Engine speed min-1: 600 Difference Amplitude to
Setting point (M pump)	Amplitude V : max.1.4
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check	(C) INJECTION PUMP WITH POSITIONER TEST POINT V1
tolerance mm : +/- 0.10  Check value (M pump)	Rated speed rpm : 750 Uact V : 3.350 Prestroke solenoid
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25	Stroke mm : 10.00  Del. quantity  cm3/1000 strokes : 332.0  Tolerance
Check tolerance mm : +/- 0.30	- cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0
Stop position (P, R and H pump)	+ Spreed + Tolerance + cm3/1000 strokes : 5.0
Uact V: Value with  deenergised adjusting magnet  and control rod in  stop position.	+ Check tolerance + cm3/1000S. : 9.0 + FUEL DELIVERY CHARACTERISTICS
CRT mm : 0.75 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35	Rated speed rpm : 750 Uact V : 1.450 Prestroke solenoid
Stop position	+ Stroke mm : 10.00 + Del. quantity
(M pump)  Uact V : 0,720  Tolerance Volt : + 0,065	+ cm3/1000 strokes : 72.0 + Tolerance + cm3/1000 strokes : +- 4.0
CRT mm : 1,00  Starting position	Check tolerance cm3/1000s. : +- 8.0 Spreed
(M pump)  Uact V : 4,500  Tolerance Volt : +- 0,115	Tolerance cm3/1000 strokes : 4.0

Check tolerance cm3/1000s.	: 8.0
Rated speed rpm Uact V	: 1000 : 3.290
Prestroke solenoi Stroke mm	: 8.00
Del. quantity cm3/1000 strokes	: 311.0
Tolerance cm3/1000 strokes Check tolerance	: +- 4.0
cm3/1000s.	: ← 8.0
Rated speed rpm Uact V Prestroke solenoi	: 500 : 2.900
Stroke mm Del. quantity	: 9.20
cm3/1000 strokes Tolerance	: 303.0
cm3/1000 strokes	: <del></del> 5.0
cm3/1000s.	: +- 9.0
Rated speed rpm Uact V	: 500 : 2.100
Prestroke solenoi Stroke mm	: 6.20
Del. quantity cm3/1000 strokes Tolerance	: 172.0
cm3/1000 strokes Check tolerance	: +- 4.0
cm3/1000s.	: +- 8.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt	: 300 : 1.500 : +- 0.060
Check tolerance Volt	: +- 0.080
Prestroke solenoi	d : 7.20
Del. quantity cm3/1000 strokes	: 32.0
Tolerance cm3/1000 strokes	: +- 3.0
Spreed Tolerance	. 80
cm3/1000 strokes Check tolerance	: 8.0
cm3/1000s.	: 12.0

Rated speed rpm Uact V	:	100 2.450	
Prestroke solenoi Stroke mm	d :	7.00	
Del. quantity cm3/1000 strokes	:	178.0	
Tolerance cm3/1000 strokes	: +-	10.0	
Check tolerance cm3/1000S.	: +-	14.0	

Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 29.03.96 : ISO 4113

Combination No. : 0 402 795 205

Injection pump

Pump designation : PES5H120/720/3LS1002

: -2

EP type number : 0 412 725 205

Governor

Governer design. : RE33

Governer no.

: 0 421 890 362

Cust. part No. : 51.111103-7540

Customer-spec. information

Customer

: MAN

Motor

: D 2865 LUH 07

Power KW

: 228.0

TEST BENCH REQUIREMENTS

Inlet line

: 4-unten

Test oil inlet

temp. °C

Tolerance °C

2.0

Overflow valve

: 2 417 413 082

Inlet press. bar :

3.0

Tolerance bar :  $\leftarrow$  0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

208.5

Tolerance bar

Test lines

: 1 680 750 089

Outside diameter : 8.0

x inside diameter :

3.0

x length mm :

600

REMARKS

Pump-specific values in Section (B)

must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 26.0

Tolerance bar : +-1.0

Prestroke mm

: 10.00

Tolerance mm

: +- 0.05

Check

tolerance mm

: +- 0.10

Rack travel in mm : 10.50

Tolerance mm :  $\leftarrow$  0.50

Firing order

: 1-3-5-4-2

Phasing

: 0-72-144-216-288

Tolerance

tolerance °NW

: +- 0.50

Check

: **←** 0.75

Start of delivery blocking

Barrel no. :

(B) POSITIONER TESTING

Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-1:

Setting point	+ CRT mm : 19,00
(P, R and H pump)	+ Tolerance mm : + 0,80
	+
Uact V : 3.100 CRT mm : 13.00	+ ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05	+ (All P and R pumps not
Check	+ H and M pumps)
tolerance mm : +/- 0.10	
toter ance than	Test with control rod
Check value	in stop position
(P, R and H pump)	+
.,	Engine speed min-1: 60
	+ Amplitude V : 1.4 + Tolerance V : +/- 0.6
Uact V : 1.700	
CRT mm : 6.15	+ Check
Tolerance mm : +/- 0.25	+ tolerance V : +/- 1.20
Check	To 100 100 100 100 100 100 100 100 100 10
tolerance mm : +/- 0.30	Engine speed min-1: 600 Difference
	+ Amplitude to
Setting point	+ Amplitude V : max.1.4
(M pump)	T Ampereude v . max.1.4
(i) bailes	<u> </u>
Uact V : 3.100	ļ <del></del>
Uact V : 3.100 CRT mm : 12.50	(C) INJECTION PUMP WITH POSITI
Tolerance mm : +/- 0.05	+
Check	+ TEST POINT V1
tolerance mm : +/- 0.10	† <u></u>
	+ Rated speed rpm : 750
Check value	+ Uact V : 3.350 + Prestroke solenoid
(M pump)	+ Stroke mm : 10.00
Uact V : 1.700	Del. quantity
CRT mm : 5.50	+ cm3/1000 strokes : 332.0
Tolerance mm : +/- 0.25	+ Tolerance
Check	+ cm3/1000 strokes : + 1.0
tolerance mm : +/- 0.30	Check tolerance
	+ cm3/1000s. : +- 4.0
Stop position	+ Spreed
(P, R and H pump)	+ Tolerance
	+ cm3/1000 strokes : 5.0
Uact V : Value with	+ Check tolerance
deenergised adjusting magnet	
and control rod in stop position.	+ FUEL DELIVERY CHARACTERISTICS
CRT mm : 0.75	I
Tolerance mm : +/- 0.25	Rated speed rpm : 750
Check	+ Uact V : 1.450
tolerance mm : +/- 0.35	+ Prestroke solenoid
	+ Stroke mm : 10.00
Stop position	+ Del. quantity
(M pump)	+ cm3/1000 strokes : 72.0
Uact V : 0,720	+ Tolerance
Tolerance Volt : + 0,065	+ cm3/1000 strokes : +- 4.0
CRT mm : 1,00	+ Check tolerance + cm3/1000s. : + 8 C
Starting position	+ Cm3/10005. : + 8 9
Starting position (M pump)	Tolerance
Uact V : 4,500	cm3/1000 strokes : 4.0
Tolerance Volt : + 0,115	1
( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	ľ

POSITIONER

Check tolerance cm3/1000s.	:	8.0
Rated speed rpm Uact V	:	1000 3.290
Prestroke solenoid Stroke mm	:	8.00
Del. quantity cm3/1000 strokes	:	311.0
Tolerance cm3/1000 strokes	:	+- 4.0
Check tolerance cm3/1000s.	:	<b>←</b> 8.0
Rated speed rpm Uact V	:	500 2,900
Prestroke solenoid	•	
Stroke mm Del. quantity	:	9.20
cin3/1000 strokes Tolerance	:	303.0
cm3/1000 strokes Check tolerance	:	<b>←</b> 5.0
cm3/1000s.	:	<b>←</b> 9.0
Rated speed rpm Uact V	:	500 2.100
Prestroke solenoid Stroke mm	:	6.20
Del. quantity cm3/1000 strokes	:	172.0
Tolerance cm3/1000 strokes	:	+- 4.0
Check tolerance cm3/1000s.	:	<b></b> 8.0
TEST POINT L1		
Uact V	:	300 1.500 + 0.060
Volt Prestroke solenoid	:	<b></b> 0.080
Stroke mm	:	7.20
Del. quantity cm3/1000 strokes	:	32.0
Spreed	:	+- 3.0
	:	8.0
Check tolerance cm3/1000s.	:	12.0

Rated speed rpm	:	100	
Uact V	:	2.450	
Prestroke solenoi	d		
Stroke mm	:	7.00	
Del. quantity			
cm3/1000 strokes	:	178.0	
Tolerance			
cm3/1000 strokes	: +-	10.0	
Check tolerance			
cm3/1000S.	: +-	14.0	

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 29.03.96 : ISO 4113

Combination No. : 0 402 796 040

Injection pump

Pump designation : PES6H120/320RS10-1

EP type number : 0 412 726 009

Governor

Governer design. : RE36

Governer no. : 0 421 890 363

Cust. part No. : 51.11103-7537

Customer-spec. information

Customer : MAN

Motor

: D 0826 LUH 12

Power KW

: 162.0

### TEST BENCH REQUIREMENTS

Inlet line : 3-unten

Test oil inlet

temp. °C

Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 082

Inlet press. bar :

3.0

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

208.5

Tolerance bar

: +- 1.5

Test lines : 1 680 750 089

Outside diameter :

8.0

H02

x inside diameter :

x length mm :

3.0

600

### **REMARKS**

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : +- 1.0

Prestroke mm : 8.00 Tolerance mm : + 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50

Tolerance mm : +- 0.50

Firing order : 1-5-3-6-2-

: 4

Phasing

: 0-60-120-180-240

Tolerance

: -300 : +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery blocking

Barrel no. : 1

(B) POSITIONER TESTING

Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-1:

Setting point (P, R and H pump)		+ Tolerance Volt : +- 0,115 CRT mm : 19,00 Tolerance mm : +- 0,80
CRT mm : Tolerance mm : - Check	3.100 13.00 +/- 0.05 +/- 0.10	ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps)  Test with control rod
Check value (P, R and H pump)		in stop position
CRT mm : Tolerance mm : f	1.700 6.15 -/- 0.25	Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20
Check tolerance mm : H	·/- 0.30	Engine speed min-1: 600 Difference Amplitude to
Setting point (M pump)		Amplitude V : max.1.4
Tolerance mm : H Check		(C) INJECTION PUMP WITH POSITIONER TEST POINT V1
tolerance mm : 4	7- 0.10	Rated speed rpm : 800 Uact V : 2.510 Prestroke solenoid
(M pump) Uact V :	1.700	+ Stroke mm : 13.20 + Del. quantity
CRT mm : Tolerance mm : +	5.50 /- 0.25	+ cm3/1000 strokes : 222.0 + Tolerance + cm3/1000 strokes : +- 1.0
tolerance mm : +	/- 0.30	+ Check tolerance + cm3/1000s. : + 4.0 + Spreed
Stop position (P, R and H pump)		Tolerance cm3/1000 strokes : 5.0
deenergis a s	alue with ed adjusting magnet nd control rod in top position.	+ Check tolerance + cm3/1000s. : 9.0 + FUEL DELIVERY CHARACTERISTICS +
Tolerance mm : + Check	0.75 /- 0.25	Rated speed rpm : 800 Uact V : 1.400
tolerance mm : + Stop position	/- 0.35	+ Prestroke solenoid + Stroke mm : 12.00 + Del. quantity
(M pump) Uact V :	0,720	+ cm3/1000 strokes : 60.0 + Tolerance + cm3/1000 strokes : + 4.0
Tolerance Volt : + CRT mm :	- 0,065 1,00	+ Check tolerance + cm3/1000S. : +- 8.0
Starting position (M pump) Uact V :	4,500	+ Spreed + Tolerance + cm3/1000 strokes : 4.0

H03

Check tolerance cm3/1000s.	:		7.	0
Rated speed rpm Uact V Prestroke solenoid	:	,	1200 2.54	
Stroke mm Del. quantity	:		10.3	0
cm3/1000 strokes Tolerance	:		209.	0
cm3/1000 strokes Check tolerance	:	+-	6.	0
cm3/1000s.	:	+-	10.	0
Rated speed rpm Uact V	:		500 1.93	·n
Prestroke solenoid Stroke mm	•		10.4	
Del. quantity	:		146.	
	:	+-	4.	0
Check tolerance cm3/1000s.	:	+-	8.	0
TEST POINT L1				
Rated speed rpm Uact V	:		300 1.44	0
Check tolerance			0.06	
Prestroke solenoid		+-	0.08	
Stroke mm Del. quantity cm3/1000 strokes	:		8.8 17.	
Tolerance		+	3.	
Spreed Tolerance				
Check tolerance	:		8.	
cm3/1000s.	:		12.	IJ

100 2.100

7.20

104.0

Check tolerance		<del>1-</del>	10.0	
End of test spe	ecifi	cati	on sh	ee

Rated speed rpm : Uact V : Prestroke solenoid

Del. quantity cm3/1000 strokes :

Tolerance cm3/1000 strokes : +- 6.0

Stroke mm

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 29.03.96 Edition Test oil : ISO 4113

Combination No. : 0 402 796 205

Injection pump

Pump designation : PES6H120/720/3LS1006

: -1

EP type number : 0 412 726 205

Governor

Governer design. : RE33

Governer no. : 0 421 890 365

Cust. part No. 3 11103-7541

Customer-spec. information

Customer : MAN

: D 2866 LUH 21 Motor

Power KW : 257.0

### TEST BENCH REQUIREMENTS

Inlet line : 4-unten

Test oil inlet

temp. °C 40 : +- 2.0 Tolerance °C

Overflow valve : 2 417 413 082

Inlet press. bar : 3.0Tolerance bar :  $\leftarrow 0.1$ 

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

208.5 Tolerance bar : +- 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 600 x length mm :

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 10.00Tolerance mm :  $\leftarrow 0.05$ 

Check

tolerance mm : +- 0.10

Rack travel in mm: 10.50 Tolerance mm :  $\leftarrow$  0.50

: 6-2-4-1-5-Firing order

Phasing : 0-60-120-180-240

: -300

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Start of delivery blocking

Barrel no. : 6

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-		
	1: 0	+ Uact V : 4,500
g		+ Uact V : 4,500 + Tolerance Volt : +- 0,115
Setting point		+ CRT mm : 19,00
Setting point		
(P, R and H pump)		† Tolerance mm : ← 0,80
		†
Uact V	: 3.100	+
CRT mm	: 13.00	+ ENGINE-SPEED SENSOR
Tolerance mm	: +/- 0.05	+ (All P and R pumps not
Check		+ H and M pumps)
tolerance mm	· +/- 0 10	
COCCI GITICE THAT	. , 6.16	+ Test with control rod
Charle value		
Check value		† in stop position
(P, R and H pump)		†
		+ Engine speed min-1: 60
		+ Amplitude V : 1.4
Uact V	: 1.700	Amplitude V : 1.4 Tolerance V : +/- 0.6
Uact V CRT mm Tolerance mm	: 6.15	+ Check
Tolerance mm	: +/- 0.25	+ tolerance V : +/- 1.20
Check	- · · · · · · · · · · · · · · · · · · ·	1
tolerance mm	· +/- 0 30	Engine speed min-1: 600
COCCI MITOC TIME	, 0.30	Difference
		- Amplitude to
B-443		
Setting point		+ Amplitude V : max.1.4
(M pump)		†
	7 400	†
Uact V	: 3.100	<b>T.</b>
CRT mm	: 12.50	+ (C) INJECTION PUMP WITH POSITIONER
Tolerance mm	: +/- 0.05	+
Check		+ TEST POINT V1
tolerance mm	: +/- 0.10	+
		+ Rated speed rpm : 750
Check value		+ Uact V : 3.350
(dmpd M)		Prestroke solenoid
		+ Stroke mm : 10.00
	4 700	+ Del. quantity
llart V	: 7.700	
Uact V	: 1.700 · 5.50	cm3/1000 strokes : 332 0
Uact V CRT mm	: 1.700 : 5.50	+ cm3/1000 strokes : 332.0
CRT mm Tolerance mm	: 1.700 : 5.50 : +/- 0.25	+ cm3/1000 strokes : 332.0 + Tolerance
CRT mm Tolerance mm Check	: +/- 0.25	+ cm3/1000 strokes : 332.0 + Tolerance + cm3/1000 strokes : +- 1.0
CRT mm Tolerance mm	: +/- 0.25	+ cm3/1000 strokes : 332.0 + Tolerance + cm3/1000 strokes : + 1.0 + Check tolerance
CRT mm Tolerance mm Check tolerance mm	: +/- 0.25	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : - 1.0 - Check tolerance - cm3/1000s. : - 4.0
CRT mm Tolerance mm Check tolerance mm Stop position	: +/- 0.25	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : 1.0 - Check tolerance - cm3/1000s. : 4.0 - Spreed
CRT mm Tolerance mm Check tolerance mm	: +/- 0.25	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000S. : + 4.0 - Spreed - Tolerance
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump)	: +/- 0.25 : +/- 0.30	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V	: +/- 0.25 : +/- 0.30 : Value with	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V	<ul><li>: +/- 0.25</li><li>: +/- 0.30</li><li>: Value with rgised adjusting magnet</li></ul>	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V	: +/- 0.25 : +/- 0.30 : Value with	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V	<ul><li>: +/- 0.25</li><li>: +/- 0.30</li><li>: Value with rgised adjusting magnet</li></ul>	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V	: +/- 0.25 : +/- 0.30 : Value with rgised adjusting magner and control rod in	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener	<ul> <li>: +/- 0.25</li> <li>: +/- 0.30</li> <li>: Value with rgised adjusting magnetand control rod in stop position.</li> <li>: 0.75</li> </ul>	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0 - FUEL DELIVERY CHARACTERISTICS
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm	<ul> <li>: +/- 0.25</li> <li>: +/- 0.30</li> <li>: Value with rgised adjusting magnetand control rod in stop position.</li> </ul>	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0 - FUEL DELIVERY CHARACTERISTICS - Rated speed rpm : 750
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magnet and control rod in stop position. : 0.75 : +/- 0.25	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : +- 1.0 - Check tolerance - cm3/1000s. : +- 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0 - FUEL DELIVERY CHARACTERISTICS - Rated speed rpm : 750 - Uact V : 1.450
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm	<ul> <li>: +/- 0.25</li> <li>: +/- 0.30</li> <li>: Value with rgised adjusting magnetand control rod in stop position.</li> <li>: 0.75</li> </ul>	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : +- 1.0 - Check tolerance - cm3/1000s. : +- 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0 - FUEL DELIVERY CHARACTERISTICS - Rated speed rpm : 750 - Uact V : 1.450 - Prestroke solenoid
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magnet and control rod in stop position. : 0.75 : +/- 0.25	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0 - FUEL DELIVERY CHARACTERISTICS - Rated speed rpm : 750 - Uact V : 1.450 - Prestroke solenoid - Stroke mm : 10.00
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magnet and control rod in stop position. : 0.75 : +/- 0.25	- cm3/1000 strokes : 332.0  Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 750 Uact V : 1.450 Prestroke solenoid Stroke mm : 10.00 Del. quantity
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm Stop position (M pump)	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magner and control rod in stop position. : 0.75 : +/- 0.25 : +/- 0.35	- cm3/1000 strokes : 332.0 - Tolerance - cm3/1000 strokes : + 1.0 - Check tolerance - cm3/1000s. : + 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0 - FUEL DELIVERY CHARACTERISTICS - Rated speed rpm : 750 - Uact V : 1.450 - Prestroke solenoid - Stroke mm : 10.00 - Del. quantity - cm3/1000 strokes : 74.0
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm Stop position (M pump) Uact V	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magner and control rod in stop position. : 0.75 : +/- 0.25 : +/- 0.35	- cm3/1000 strokes : 332.0  Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 750 Uact V : 1.450 Prestroke solenoid Stroke mm : 10.00 Del. quantity cm3/1000 strokes : 74.0 Tolerance
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm Stop position (M pump) Uact V Tolerance Volt	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magner and control rod in stop position. : 0.75 : +/- 0.25 : +/- 0.35  : 0,720 : +- 0,065	- cm3/1000 strokes : 332.0  Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 750 Uact V : 1.450 Prestroke solenoid Stroke mm : 10.00 Del. quantity cm3/1000 strokes : 74.0 Tolerance cm3/1000 strokes : + 4.0
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm Stop position (M pump) Uact V	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magner and control rod in stop position. : 0.75 : +/- 0.25 : +/- 0.35	- cm3/1000 strokes : 332.0  Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 750 Uact V : 1.450 Prestroke solenoid Stroke mm : 10.00 Del. quantity cm3/1000 strokes : 74.0 Tolerance cm3/1000 strokes : + 4.0 Check tolerance
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm Stop position (M pump) Uact V Tolerance Volt CRT mm	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magner and control rod in stop position. : 0.75 : +/- 0.25 : +/- 0.35  : 0,720 : +- 0,065	- cm3/1000 strokes : 332.0  Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 750 Uact V : 1.450 Prestroke solenoid Stroke mm : 10.00 Del. quantity cm3/1000 strokes : 74.0 Tolerance cm3/1000 strokes : + 4.0 Check tolerance cm3/1000s. : + 8.0
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm Stop position (M pump) Uact V Tolerance Volt	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magner and control rod in stop position. : 0.75 : +/- 0.25 : +/- 0.35  : 0,720 : +- 0,065	- cm3/1000 strokes : 332.0  Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 750 Uact V : 1.450 Prestroke solenoid Stroke mm : 10.00 Del. quantity cm3/1000 strokes : 74.0 Tolerance cm3/1000 strokes : + 4.0 Check tolerance
CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pump) Uact V deener  CRT mm Tolerance mm Check tolerance mm Stop position (M pump) Uact V Tolerance Volt CRT mm	: +/- 0.25 : +/- 0.30  : Value with rgised adjusting magner and control rod in stop position. : 0.75 : +/- 0.25 : +/- 0.35  : 0,720 : +- 0,065	- cm3/1000 strokes : 332.0  Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 750 Uact V : 1.450 Prestroke solenoid Stroke mm : 10.00 Del. quantity cm3/1000 strokes : 74.0 Tolerance cm3/1000 strokes : + 4.0 Check tolerance cm3/1000s. : + 8.0

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Tolerance cm3/1000 strokes : Check tolerance	4.0
cm3/1000s. :	8.0
Uact V :	000 3.290
Prestroke solenoid Stroke mm :	8.00
Del. quantity cm3/1000 strokes : I Tolerance	314.0
cm3/1000 strokes : +- Check tolerance	4.0
cm3/1000s. : +-	8.0
Uact V : 3	500 2.900
Prestroke solenoid Stroke mm :	9.20
	307.0
Tolerance cm3/1000 strokes : +-	5.0
Check tolerance cm3/1000s. : +-	9.0
Uact V : 2	500 2.100
Uact V : 2 Prestroke solenoid Stroke mm :	
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1	2.100
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance cm3/1000 strokes : +-	2.100 6.20
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance	6.20 6.20 176.0 4.0
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance cm3/1000 strokes : +- Check tolerance	6.20 6.20 76.0 4.0
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance cm3/1000 strokes : +- Check tolerance cm3/1000s. : +- TEST POINT L1  Rated speed rpm : 3 Uact V : 1 Tolerance Volt : +-	6.20 6.20 76.0 4.0
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance cm3/1000 strokes : +- Check tolerance cm3/1000s. : +- TEST POINT L1  Rated speed rpm : 3 Uact V : 1 Tolerance Volt : +- 0 Check tolerance Volt : +- 0	2.100 6.20 176.0 4.0 8.0
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance cm3/1000 strokes : +- Check tolerance cm3/1000s. : +- TEST POINT L1  Rated speed rpm : 3 Uact V : 1 Tolerance Volt : +- 0 Check tolerance Volt : +- 0 Prestroke solenoid Stroke mm : 3	2.100 6.20 76.0 4.0 8.0 8.0
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance cm3/1000 strokes : +- Check tolerance cm3/1000s. : +-  TEST POINT L1  Rated speed rpm : 3 Uact V : 1 Tolerance Volt : +- Check tolerance Volt : +- Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes :	2.100 6.20 76.0 4.0 8.0 8.0 0.500 0.060
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance cm3/1000 strokes : +- Check tolerance cm3/1000s. : +-  TEST POINT L1  Rated speed rpm : 3 Uact V : 1 Tolerance Volt : +- 0 Check tolerance Volt : +- 0 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : +- Spreed	2.100 6.20 76.0 4.0 8.0 8.0 0.500 0.060 0.080 7.20
Uact V : 2 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : 1 Tolerance cm3/1000 strokes : +- Check tolerance cm3/1000s. : +-  TEST POINT L1  Rated speed rpm : 3 Uact V : 1 Tolerance Volt : +- 0 Check tolerance Volt : +- 0 Prestroke solenoid Stroke mm : Del. quantity cm3/1000 strokes : +- Tolerance cm3/1000 strokes : +-	2.100 6.20 176.0 4.0 8.0 8.0 0.060 0.060 7.20 36.0

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Rated speed rpm Uact V	:	100 2.450	
Prestroke solenoi Stroke mm	: :	7.00	
Del. quantity cm3/1000 strokes Tolerance	:	183.0	
cm3/1000 strokes Check tolerance	: +-	- 10.0	
cm3/1000s.	: +-	- 14.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 19.04.96 Test oil : ISO 4113

Combination No. : 0 402 196 702

Injection pump

Pump designation : PES6P120A720RS3184

EP type number : 0 412 026 727

Governor

Governer design. : RE24

Governer no. : 0 421 890 006

Cust. part No. : RE 47396

Customer—spec. information
Customer : DEERE
Motor : 6076 F030
Power KW : 205.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C : 40Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 101

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter: 3.0 x length mm : 600

#### REMARKS

Pump—specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : + 1.0

Prestroke mm : 3.60
Tolerance mm : + 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

٠ 4

Phasing : 0-60-120-180-240

: -300

Start of delivery blocking

°NW after s.o.d. : 10.50 Tolerance :  $\leftarrow 0.50$ 

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack

travel : 15.00
Tolerance mm : + 0.50
Difference ° CS : 6.00

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0

Setting point (P, R and H pump)

Uact V CRT mm : 3.100 : 13.00 3.100 : +/- 0.05 Tolerance mm Check

tolerance mm : +/- 0.10

Check value (P, R and H pump)

: 1.700 : 6.15 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30

Setting point (qmuq M)

Uact V 3.100 : 3.100 : 12.50 CRT mm Tolerance mm : +/- 0.05 Check

: +/- 0.10 tolerance mm

Check value (qmuq M)

Uact V 1.700 CRT mm 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/-0.30

Stop position (P, R and H pump)

: Value with Uact V

deenergised adjusting magnet and control rod in

stop position.

CRT mm 0.75 : +/- 0.25 Tolerance mm

Check

tolerance mm :  $\pm -0.35$ 

Stop position (M pump)

Uact V 0,720 : + 0.065Tolerance Volt 1,00 CRT mm

Starting position

(dmuq M)

: 4,500 Uact V Tolerance Volt : +- 0,115 : 19,00 CRT mm : +- 0,80 Tolerance mm

**ENGINE-SPEED SENSOR** (All P and R pumps not H and M pumps)

Test with control rod in stop position

Engine speed min-1: 60Amplitude V : 1.4Tolerance V : +/-0.6

Check

tolerance V : +/- 1.20

Engine speed min-1: 600

Difference

Amplitude to

Amplitude V : max.1.4

# (C) INJECTION PUMP WITH POSITIONER

### TEST POINT V1

Rated speed rpm : 1100 Uact V 2.710 Del. quantity

cm3/1000 strokes : 141.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  1.0

Check tolerance cm3/1000s. : +- 4.0

Spreed Tolerance

cm3/1000 strokes : 5.0 Check tolerance

cm3/1000S. 9.0 FUEL DELIVERY CHARACTERISTICS

Rated speed rpm : 700 Uact V 2.710

H09

Del. quantity cm3/1000 strokes	: 142.0
Tolerance cm3/1000 strokes	: <del></del> 3.0
Check tolerance	
cm3/1000s.	: <del>+-</del> 6.0
Spreed Tolerance	
cm3/1000 strokes	: 8.0
Check tolerance	. 12.0
cm3/1000s.	: 12.0
Rated speed rpm	· 425
Uact V	: 1.400
Del. quantity	24. 0
cm3/1000 strokes Tolerance	: 21.0
cm3/1000 strokes	: <del></del> 3.0
Check tolerance	
cm3/1000s. Spreed	: +- 6.0
Tolerance	
cm3/1000 strokes	: 6.0
Check tolerance cm3/1000s.	: 10.0
CH3/ 10003.	. 10.0
TEST POINT L1	
Rated speed rpm	: 425
Uact V	: 1.610
Tolerance Volt Check tolerance	: ← 0.060
Volt	: <del>+-</del> 0.060
STARTING FUEL DEL	IVERY
Rated speed rpm	: 100
Uact V	: 4.600
Del. quantity cm3/1000 strokes	: 100.0
Tolerance	
cm3/1000 strokes	: <b>←</b> 10.0
Check tolerance cm3/1000s.	: + 13.0
	15.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 20.03.96 : ISO 4113

Combination No. : 0 402 196 710

Injection pump

Pump designation : PES6P120A720RS3354 EP type number : 0 412 026 781

Governor

Governer design. : RE30

Governer no. :

Cust. part No. : RE 67448

Customer-spec. information

Customer : DEERE
Motor : 6081AT002 Motor

Power KW : 135.0

## TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

40 temp. °C Tolerance °C : +- 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0

Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 101

Opening pressure

bar Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter: 3.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

### BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar : +- 1.0

Prestroke mm : 3.60 Tolerance mm : +- 0.05 Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  1.50

Firing order : 1-5-3-6-2-

: 4

: 0-60-120-180-240 Phasing

Start of delivery mark

°NW after s.o.d. : 7.00 Tolerance : +- 0.50 Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack

travel : 15.00
Tolerance mm : + 0.50
Difference ° CS : 2.50

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION

Engine speed min-1:

Setting point (P, R and H pump)

: 3.100 : 13.00 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check

tolerance mm :  $\pm$  +/- 0.10

Check value (P, R and H pump)

Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check

tolerance mm :  $\pm - 0.30$ 

Setting point (M pump)

Uact V : 3.100 : 12.50 3.100 Tolerance mm : +/- 0.05

Check

tolerance mm : +/- 0.10

Check value (M pump)

: 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check

tolerance mm :  $\pm -0.30$ 

Stop position (P, R and H pump)

: Value with Uact V

deenergised adjusting magnet and control rod in

stop position.

: 0.75 CRT mm Tolerance mm :  $\pm$  +/- 0.25 Check

tolerance mm :  $\pm -0.35$ 

Stop position

(M pump)

Uact V 0,720 Tolerance Volt : +- 0.065CRT mm

Starting position

(M pump)

Uact V 4,500 Uact v
Tolerance Volt : + U, ...
: 19,00 Tolerance mm : + 0,80

ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps)

Test with control rod in stop position

Engine speed min-1: 60 Amplitude V : 1.4Tolerance V : +/-0.6Check

tolerance V : +/- 1.20

Engine speed min-1: 600

Difference

Amplitude to

Amplitude V : max.1.4

### (C) INJECTION PUMP WITH POSITIONER

TEST POINT V1

Rated speed rpm : 1100 Uact V : 2.880

Del. quantity

cm3/1000 strokes : 140.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  1.0

Check tolerance

cm3/1000s. : +-3.0

Spreed

Tolerance

cm3/1000 strokes : 5.0

Check tolerance

cm3/1000s. FUEL DELIVERY CHARACTERISTICS

Rated speed rpm : Uact V : 700

2.880

H12

Uact V Del. quantity cm3/1000 strokes	: 4.600 : 105.0
STARTING FUEL DEL Rated speed rpm	IVERY : 100
Volt	: +- 0.060
Check tolerance	
Rated speed rpm Uact V Tolerance Volt	: 425 : 1.610 : +- 0.060
TEST POINT L1	
cm3/1000s.	: 10.0
cm3/1000 strokes Check tolerance	: 6.0
Spreed Tolerance	
Check tolerance cm3/1000s.	: <b>←</b> 6.0
cm3/1000 strokes	: <b>←</b> 3.0
cm3/1000 strokes Tolerance	: 22.0
Uact V Del. quantity	: 1.610
Rated speed rpm	: 425
cm3/1000S.	: 12.0
cm3/1000 strokes Check tolerance	: 8.0
Spreed Tolerance	
Check tolerance cm3/1000S.	: +- 6.0
cm3/1000 strokes	: <b>←</b> 3.0
cm3/1000 strokes Tolerance	. 141.5

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 21.06.96 Test oil : ISO 4113

Combination No. : 0 402 196 705

Injection pump

Pump designation : PES6P120A720RS3347

EP type number : 0 412 026 777

Governor

Governer design. : RE30

Governer no. : 0 421 890 029

Cust. part No. : RE 63514

Customer—spec. information Customer : DEERE

Motor : 6076 HRW35 Power KW : 181.0

#### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp.  $^{\circ}$ C : 40 Tolerance  $^{\circ}$ C : +- 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 1.5 Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 101

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter : 3.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : +- 1.0

tolerance mm : + 0.10

Rack travel in mm : 10.50 Tolerance mm : + 1.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Start of delivery blocking

\*NW after s.o.d. : 10.50
Tolerance : + 0.50
Check
tolerance \*NW : + 0.75

Barrel no. : 1

(B) POSITIONER TESTING

Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR **POSITION** Engine speed min-1: Setting point (P, R and H pump) Uact V CRT mm : 3.100 : 13.00 3.100 Tolerance mm : +/- 0.05 Check : +/- 0.10 tolerance mm Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Setting point (M pump) : 3.100 Uact V CRT mm 12.50 : +/- 0.05 Tolerance mm Check : +/- 0.10 tolerance mm Check value (M pump) 1.700 Uact V 5.50 CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm Tolerance mm : +/- 0.25 Check : +/- 0.35 tolerance mm Stop position (M pump) 0,720 Uact V

CRT mm : 1,00 Starting position (M pump) Uact V : 4,500 : **←** 0,115 Tolerance Volt CRT mm : 19,00 Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 1100 Uact V 2.710 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s.9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm 700 Uact V 2.710 Del. quantity cm3/1000 strokes : 142.0 Tolerance cm3/1000 strokes :  $\leftarrow$  3.0 Check tolerance 6.0 cm3/1000s. : +-

Spreed

Tolerance Volt : + 0,065

Tolerance		
cm3/1000 strokes	:	8.0
Check tolerance		
cm3/1000S	•	12.0

# TEST POINT L1

Rated speed rpm	:		425
Uact V	:		1.400
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Del. quantity			
cm3/1000 strokes	:		19.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		6.0
Check tolerance			
cm3/1000S.	:		10.0

# STARTING FUEL DELIVERY

Rated speed rpm	: 100
Uact V	: 4.600
Del. quantity	
cm3/1000 strokes	: 100.0
Tolerance	
cm3/1000 strokes	: +- 10.0
Check tolerance	
cm3/1000S.	: <del>+-</del> 13.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 21.06.96 Edition : ISO 4113 Test oil

Combination No. : 0 402 796 823

Injection pump

Pump designation : PES6P120A720RS7356 EP type number : 0 412 726 919

Governor

Governer design. : RE30

Governer no. : 0 421 890 017

Cust. part No. : RE 67884

Customer-spec. information

Customer : DEERE Motor

: 6081 HRW 05

Power KW : 198.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C : +- 2.0 Tolerance °C

Overflow valve : 2 417 413 077

Inlet press. bar : Tolerance bar : <del>←</del> 0.1

Test nozzle holde

: 1 688 901 103 assembly

Opening pressure

208.5 bar : **←** 1.5 Tolerance bar

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar : + 1.0

Prestroke mm : 3.60 Tolerance mm : + 0.05 3.60 Check

tolerance mm : + 0.10

Rack travel in mm : 10.50 : +- 0.50 Tolerance mm

Firing order : 1-5-3-6-2-

: 4

: 0-60-120-180-240 Phasing

Start of delivery blocking

\*NW after s.o.d. : 9.25 Tolerance : +- 0.50 Check

tolerance "NW : + 0.75

: 1 Barrel no.

Beginning of delivery differende

and maximum rack

15.00 travel Difference ° CS :

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Setting point (M pump) : 3.100 : 12.50 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (dund W) : 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in stop position.  $\begin{array}{lll} \text{CRT mm} & : & 0.75 \\ \text{Tolerance mm} & : +/- 0.25 \end{array}$ 

tolerance mm :  $\pm -0.35$ Stop position (qmuq M) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm 1,00 Starting position (M pump) : 4,500 Uact V Tolerance Volt : + 0,115 CRT mm : 19,00 Tolerance mm : ← 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 1050 Uact V : Del. quantity 3.030 cm3/1000 strokes : 213.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : <del>←</del> 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 700 3.120 Uact V Del. quantity cm3/1000 strokes : 237.0

Check

Tolerance		
cm3/1000 strokes	: +-	3.0
Check tolerance		
cm3/1000S.	: +-	6.0
Spreed		
Tolerance		
cm3/1000 strokes	:	8.0
Check tolerance		
cm3/1000S.	:	12.0
TEST DOTAT 11		

#### TEST POINT L1

Rated speed rpm	:		450
Uact V	:		1.740
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Del. quantity			
cm3/1000 strokes	:		26.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		6.0
Check tolerance			
cm3/1000s.	:		10.0

# STARTING FUEL DELIVERY

Rated speed rpm	:	100
Uact V	:	4.550
Del. quantity		
cm3/1000 strokes	:	120.0
Tolerance		
cm3/1000 strokes	: +-	20.0
Check tolerance		
cm3/1000s.	: +-	25.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 23.07.96 : ISO 4113

Combination No. : 0 402 798 800

Injection pump

Pump designation : PES8P120A920/4LS7293

EP type number : 0 412 728 807

Governor

Governer design. : RE30

Governer no. : 0 421 890 016

Cust. part No. : 313 GC 5208

Customer-spec. information : MACK Customer

Motor

: EE9-550

Power KW : 410.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C

40

Tolerance °C : +- 2.0

Overflow valve : 2 417 413 086

Inlet press. bar :

Tolerance bar

: +- 0.1

Test nozzle holde assembly

: 1 688 901 103

Opening pressure

bar

208.5

Tolerance bar

: +- 1.5

Test lines

: 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0

x length mm :

600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : +- 1.0

Prestroke mm 3.30 : **←** 0.05 Tolerance mm

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm : +- 0.20

Firing order : 1-2-7-8-4

: - 5- 6- 3

: 0-45-90-135-180 Phasing

: -225-270-315

# Start of delivery blocking

: **←** 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

**POSITION** 

: 4,500 Engine speed min-1: 0 Uact V Tolerance Volt :  $\leftarrow$  0,115 Setting point CRT mm 19,00 Tolerance mm (P, R and H pump) : +- 0,80 3.100 Uact V ENGINE-SPEED SENSOR CRT mm 13.00 : +/- 0.05 (All P and R pumps not Tolerance mm H and M pumps) Check : +/- 0.10 tolerance mm Test with control rod Check value in stop position (P, R and H pump) Engine speed min-1: 60 1.4 Amplitude V : Tolerance V 1.700 : +/- 0.6 Uact V CRT mm 6.15 Check tolerance V : +/- 1.20 : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Engine speed min-1: 600 Difference Amplitude to Setting point Amplitude V : max.1.4 (qmuq M) Uact V 3.100 12.50 CRT mm (C) INJECTION PUMP WITH POSITIONER Tolerance mm : +/~ 0.05 TEST POINT V1 Check : +/- 0.10 tolerance mm 950 Rated speed rpm : Check value Uact V 3.000 (qmuq M) Del. quantity cm3/1000 strokes : 300.5 Uact V 1.700 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 CRT mm 5.50 : +/- 0.25 Tolerance mm Check tolerance cm3/1000S. : +-Check tolerance mm : +/- 0.30 Spreed Tolerance cm3/1000 strokes : 7.0 Stop position Check tolerance (P, R and H pump) cm3/1000s. Uact V : Value with FUEL DELIVERY CHARACTERISTICS deenergised adjusting magnet and control rod in 700 stop position. Rated speed rpm CRT mm 0.75 Uact V 2.990 : +/- 0.25 Del. quantity Tolerance mm cm3/1000 strokes : 339.5 Check : +/- 0.35 Tolerance tolerance mm cm3/1000 strokes :  $\leftarrow$  5.0 Check tolerance Stop position cm3/1000S. (qmuq M) : +-8.0 0,720 Uact V Spreed : **←** 0,065 Tolerance Tolerance Volt cm3/1000 strokes : 12.0 1,00 CRT mm Check tolerance Starting position cm3/1000S. 16.0

(amua M)

## TEST POINT L1

Rated speed rpm 325 Uact V 1.300 Tolerance Volt : + 0.060Check tolerance Volt : + 0.070Del. quantity cm3/1000 strokes : 27.0 Tolerance cm3/1000 strokes : +-3.0 Spreed Tolerance 8.0 cm3/1000 strokes : Check tolerance 12.0 cm3/1000s.

## STARTING FUEL DELIVERY

100 Rated speed rpm 4.700 Uact V Del. quantity cm3/1000 strokes : 180.0 Tolerance cm3/1000 strokes :  $\leftarrow$  15.0 Check tolerance cm3/1000s. : +- 20.0 Spreed Tolerance cm3/1000 strokes : 40.0 Check tolerance cm3/1000s.45.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil : 23.07.96 : ISO 4113

Combination No. : 0 402 798 801

Injection pump

Pump designation : PES8P120A920/4LS7336

EP type number : 0 412 728 810

Governor

Governer design. : RE30

Governer no. : 0 421 890 016

Cust. part No. : 313 GC 5209

Customer-spec. information Customer : MACK : E9-550 Motor Power KW : 410.0

#### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C 40 Tolerance °C : +- 2.0

Overflow valve : 2 417 413 086

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 103 assembly

Opening pressure

208.5 bar : +- 1.5 Tolerance bar

Test Lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : + 1.0

: 3.30 : +- 0.05 Prestroke mm Tolerance mm Check

tolerance mm : **←** 0.10

Rack travel in mm : 10.50 Tolerance mm : +- 0.20

Firing order : 1-2-7-8-4

: - 5- 6- 3

: 0-45-90-135-180 Phasing

: -225-270-315

Start of delivery blocking

Tolerance :  $\leftarrow$  0.50

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

	1 200
Engine speed min-1: 0	(M pump)
pigine speed with-1.	Uact V : 4,500 Tolerance Volt : + 0,115
Setting point	CRT mm : 19,00
(P, R and H pump)	+ Tolerance mm : +- 0,80
	+
Uact V : 3.100 CRT mm : 13.00	ENDAME OPERA CENTOD
CRT mm : 13.00	+ ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05 Check	+ (All P and R pumps not + H and M pumps)
tolerance mm : +/- 0.10	
toterance with . 17 O.10	Test with control rod
Check value	in stop position
(P, R and H pump)	+
	+ Engine speed min-1: 60
A	Amplitude V : 1.4 Tolerance V : +/- 0.6
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25	+ Tolerance V : +/- 0.6
CRI mm : 0.75	+ Check + tolerance V : +/- 1.20
Check	1 Coterance v . +/- 1.20
tolerance mm : +/- 0.30	Engine speed min-1: 600
10101 HAIT . 17 0.30	+ Difference
	+ Amplitude to
Setting point	+ Amplitude V : max.1.4
(M pump)	+
- 400	+
Uact V : 3.100 CRT mm : 12.50	(c) THE CTION DIMEN LITTLE DOCUTIONED
CRT mm : 12.50  Tolerance mm : +/- 0.05	(c) INJECTION PUMP WITH POSITIONER
Check	TEST POINT V1
tolerance mm : +/- 0.10	1 7231 701141 47
COLCT OF THE COUNTY	Rated speed rpm : 900
Check value	∔ Hact V : 2.950
(M pump)	+ Del. quantity
	+ cm3/1000 strokes : 303.0
Uact V : 1.700	+ Tolerance
CRT mm : 5.50	- cm3/1000 strokes : + 1.0
Tolerance mm : +/- 0.25 Check	+ Check tolerance + cm3/1000s. : +- 4.0
tolerance mm : +/- 0.30	+ Spreed
toter ance min	+ Tolerance
Stop position	cm3/1000 strokes : 7.0
(P, R and H pump)	+ Check tolerance
	+ cm3/1000s. : 11.0
Uact V : Value with	+ FUEL DELIVERY CHARACTERISTICS
deenergised adjusting magnet	†
and control rod in stop position.	Rated speed rpm : 625
CRT mm : 0.75	Uact V : 2.880
Tolerance mm : +/- 0.25	Del. quantity
Check	+ cm3/1000 strokes : 339.5
tolerance mm : +/- 0.35	+ Tolerance
	+ cm3/1000 strokes : +- 5.0
Stop position	+ Check tolerance
(M pump)	+  cm3/1000s. : +- 8.0
Uact V : 0,720 Tolerance Volt : +- 0,065	+ Spreed + Tolerance
Tolerance Volt : +- 0,065 CRT mm : 1,00	+ cm3/1000 strokes : 12.0
CIVI (IIII) . 1700	Check tolerance
	,
Starting position	+ cm3/1000s. : 16.0

H24

## TEST POINT L1

Rated speed rpm	:	325
Uact V	:	1.300
Tolerance Volt	:	← 0.060
Check tolerance		
Volt	:	+- 0.070
Del. quantity		
cm3/1000 strokes	:	27.0
Tolerance		
cm3/1000 strokes	:	<b>←</b> 3.0
Spreed		
Tolerance		
cm3/1000 strokes	:	8.0
Check tolerance		
cm3/1000s.	:	12.0

## STARTING FUEL DELIVERY

Rated speed rpm	:	100
Uact V	:	4.700
Del. quantity		
cm3/1000 strokes	:	180.0
Tolerance		
cm3/1000 strokes	: +-	15.0
Check tolerance		
cm3/1000s.	: +-	20.0
Spreed		
Tolerance		
cm3/1000 strokes	:	40.0
Check tolerance		
cm3/1000S	:	45.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

**Fdition** Test oil

: 23.07.96 : ISO 4113

Combination No. : 0 402 996 304

Injection pump

Pump designation : PES6P120A720RS8510

EP type number : 0 412 926 206

Governor

Governer design. : RE30

Governer no. : 0 421 890 023

Cust. part No. : 313 GC 5205 P3

Customer-spec. information Customer : MACK : E7 450 Motor

Power KW

: 331.0

#### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

40 temp. °C Tolerance °C : +- 2.0

Overflow valve : 2 417 413 084

3.0 Inlet press. bar : Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 103

Opening pressure

: 208.5 bar Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x Length mm :

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar : + 1.0

Prestroke mm : 3.60 Tolerance mm : + 0.05 Check

tolerance mm : + 0.10

Rack travel in mm : 12.00 Tolerance mm :  $\leftarrow$  0.20

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance : **←** 0.30

Check

: **←** 0.75 tolerance °NW

Start of delivery blocking

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION
Engine speed min-1: 0
Setting point (P, R and H pump)
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check
tolerance mm : +/- 0.10
Check value (P, R and H pump)
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Setting point (M pump)
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10
Check value (M pump)
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Stop position (P, R and H pump)
Uact V : Value with  deenergised adjusting magnet  and control rod in
stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check  tolerance mm : +/- 0.35
Stop position (M pump) Uact V : 0,720

Tolerance Volt CRT mm	: +- 0,065 : 1,00
Starting position (M pump) Uact V Tolerance Volt	
Uact V Tolerance Volt CRT mm Tolerance mm	: 19,00 : +- 0,80
ENGINE-SPEED SENS (All P and R pump H and M pumps)	
Test with control in stop position	rod
Engine speed min- Amplitude V Tolerance V Check	: 1.4 : +/- 0.6
tolerance V	: +/- 1.20
Engine speed min- Difference	1: 600
Amplitude to Amplitude V	: max.1.4
	P WITH POSITIONER
Amplitude V  (C) INJECTION PUM	P WITH POSITIONER
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes	P WITH POSITIONER RACTERISTICS
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm  Uact V  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance	P WITH POSITIONER RACTERISTICS  : 625 : 3.210 : 408.0 : +- 10.0
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm  Uact V  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000s.  Spreed	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : + 10.0
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : +- 10.0 : +- 12.0
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : +- 10.0 : +- 12.0 : 16.0
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : +- 10.0 : +- 12.0
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : +- 10.0 : +- 12.0 : 16.0
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : +- 10.0 : +- 12.0 : 16.0 : 18.0 : 325
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000s. TEST POINT L1  Rated speed rpm Uact V	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : + 10.0 : + 12.0 : 16.0 : 18.0 : 325 : 1.300
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000s. TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : + 10.0 : + 12.0 : 16.0 : 18.0 : 325 : 1.300 : + 0.060
Amplitude V  (C) INJECTION PUM  FUEL DELIVERY CHA  Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000s. TEST POINT L1  Rated speed rpm Uact V Tolerance Volt	P WITH POSITIONER  RACTERISTICS  : 625 : 3.210 : 408.0 : + 10.0 : + 12.0 : 16.0 : 18.0 : 325 : 1.300

Tolerance cm3/1000 strokes	: +-	3.0	
Spreed			
Tolerance			
cm3/1000 strokes	:	6.0	
Check tolerance			
cm3/1000S.	:	14.0	

## STARTING FUEL DELIVERY

<b>~</b>		400
Rated speed rpm	:	100
Uact V	:	4.700
Del. quantity		
cm3/1000 strokes	:	188.0
Tolerance		
cm3/1000 strokes	: +-	19.0
Check tolerance		
cm3/1000S.	: +-	22.0
Spreed		
Tolerance		
7/4000	:	40.0
Check tolerance	-	
cm3/1000s.	•	50.0
007 100001	•	30.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 23.07.96 : ISO 4113

Combination No. : 0 402 996 305

Injection pump

Pump designation : PES6P120A720RS8512

EP type number : 0 412 926 207

Governor

Governer design. : RE30

Governer no. : 0 421 890 024

Cust. part No. : 313 GC 5217 P1

Customer—spec. information Customer : MACK Motor : E7

## TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C : +- 2.0 Tolerance °C

Overflow valve : 2 413 359 008

Inlet press. bar : 3.0 Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 103

Opening pressure

: 208.5 Tolerance bar : +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x Length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar :  $\leftarrow$  1.0

Prestroke mm : 4.60 Tolerance mm : + 0.05 Check

: +- 0.10 tolerance mm

Rack travel in mm : 12.00 Tolerance mm : +- 0.20

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

: -300 Tolerance : **←** 0.30

Check

tolerance °NW : + 0.75

Start of delivery blocking

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION	
Engine speed min-1: 0	
Setting point (P, R and H pump)	
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump)	
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30	
Setting point (M pump)	
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10	
Check value (M pump)	
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30	
tolerance mm : +/- 0.30  Stop position (P, R and H pump)	
Uact V : Value with deenergised adjusting magne and control rod in	t
stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35	
Stop position (M pump) Uact V : 0,720	

Tolerance Volt : +- 0,065 CRT mm : 1,00
Starting position (M pump) Uact V : 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00 Tolerance mm : + 0,80
ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps)
Test with control rod in stop position
Engine speed min-1: 60 Amplitude V: 1.4 Tolerance V: +/- 0.6 Check tolerance V: +/- 1.20
Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4
(C) INJECTION PUMP WITH POSITIONER
(C) INJECTION PUMP WITH POSITIONER TEST POINT V1
TEST POINT V1  Rated speed rpm : 900  Uact V : 3.050  Del. quantity  cm3/1000 strokes : 310.0
TEST POINT V1  Rated speed rpm : 900 Uact V : 3.050 Del. quantity
TEST POINT V1  Rated speed rpm : 900  Uact V : 3.050  Del. quantity  cm3/1000 strokes : 310.0  Tolerance  cm3/1000 strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 5.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance
TEST POINT V1  Rated speed rpm : 900 Uact V : 3.050 Del. quantity cm3/1000 strokes : 310.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 5.0 Spreed Tolerance cm3/1000 strokes : 8.0
TEST POINT V1  Rated speed rpm : 900 Uact V : 3.050 Del. quantity cm3/1000 strokes : 310.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 14.0

Tolerance		
cm3/1000 strokes	:	16.0
Check tolerance		
cm3/1000s.	:	18.0

## TEST POINT L1

Rated speed rpm	:		325
Uact V	:		1.310
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.070
Del. quantity			
cm3/1000 strokes	:		33.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		6.0
Check tolerance			
cm3/1000s.	:		14.0

## STARTING FUEL DELIVERY

Rated speed rpm Uact V	:	100 4.700
Olino, 1000 Del Olico	:	195.0
Tolerance cm3/1000 strokes Check tolerance	: +-	19.0
cm3/1000s.	: +-	22.0
Tolerance cm3/1000 strokes	:	40.0
Check tolerance cm3/1000s.	:	50.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 13.09.95 Test oil : ISO 4113

Combination No. : 0 402 896 016

Injection pump

Pump designation : PE6P120A320RS8034 EP type number : 0 412 826 032

Governor

Governer design. : RE30

Governer no. : 0 421 890 028

Cust. part No. : 8194088 PO3 rel 8/95

Customer-spec. information

Customer : VOLVO-TRUCK
Power KW : 265 0

: 265.0 Power KW

#### TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C 40 Tolerance °C : +- 2.0

Overflow valve : 2 417 413 073

Inlet press. bar : 3.0 Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 103 assembly

Opening pressure

: 208.5 bar Tolerance bar : +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 600

## REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 4.40 Tolerance mm : +- 0.05

Check

: +- 0.10 tolerance mm

Rack travel in mm : 11.00 Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

: -300

Tolerance : <del>←</del> 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION

Engine speed min-1: 0

Setting point (P, R and H pump)
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check
tolerance mm : +/- 0.10
Check value (P, R and H pump)
Uact V : 1.700 CRT mm : 5.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Setting point (M pump)
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10
Check value (M pump)
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Stop position (P, R and H pump)
Uact V : Value with deenergised adjusting magnet and control rod in stop position.
CRT mm : 0.75 Tolerance mm : +/- 0.25
Check tolerance mm : +/- 0.35
Stop position (M pump) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm : 1,00
Starting position (M pump) Uact V : 4,500

Tolerance	Volt		0,115
CRT mm		:	19,00
Tolerance	mm	: +	0,80

ENGINE—SPEED SENSOR (All P and R pumps not H and M pumps)

Test with control rod in stop position

Engine speed min-1: 60
Amplitude V : 1.4
Tolerance V : +/- 0.6
Check
tolerance V : +/- 1.20

Engine speed min-1: 600

Difference Amplitude to

Amplitude V : max.1.4

## (C) INJECTION PUMP WITH POSITIONER

## TEST POINT V1

Rated speed rpm : 600 Uact V 2.800 Del. quantity cm3/1000 strokes : 303.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance 11.0 cm3/1000s. FUEL DELIVERY CHARACTERISTICS

Rated speed rpm Uact V	:	950 2.800
Del. quantity cm3/1000 strokes Tolerance	:	261.0
cm3/1000 strokes	: +-	3.0
Check tolerance cm3/1000s. Spreed	: +-	6.0
Tolerance cm3/1000 strokes	:	10.0
Check tolerance cm3/1000s.	:	14.0

Rated speed rpm Uact V	: 950 : 2.200
Del. quantity cm3/1000 strokes	: 181.0
Tolerance cm3/1000 strokes Check tolerance	: +- 3.0
cm3/1000s.	: <del>+-</del> 6.0
TEST POINT L1	
Rated speed rpm	: 250

Rated speed rpm	:		250
Uact V	:		1.470
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Del. quantity			
cm3/1000 strokes	:		22.0
Tolerance			
cm3/1000 strokes	:	+	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		5.0
Check tolerance			
cm3/1000S	•		8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 29.07.96 Edition : ISO 4113 Test oil

Combination No. : 0 402 896 018

Injection pump

Pump designation : PE6P130A320RS8046 EP type number : 0 412 836 011

Governor

Governer design. : RE30

Governer no. : 0 421 890 030

Cust. part No. : 3826196 PO1 v.02/96

Customer—spec. information Customer : PENTA

: TAMD 122 EDC Motor

Power KW : 450.0

## TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

40 temp. °C Tolerance °C : + 2.0

Overflow valve : 2 417 413 078

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 103 assembly

Opening pressure

208.5 bar Tolerance bar : +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0 x inside diameter : 2.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : + 1.0

4.45 Prestroke mm Tolerance mm : +- 0.05

Check

: **←** 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm : + 0.50

Firing order : 1-5-3-6-2-

: 4

: 0-60-120-180-240 Phasing

: -300 : +- 0.30 Tolerance

Check

tolerance °NW : +- 0.75

Start of delivery mark

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-1: 0

Setting point (P, R and H pump)			
Uact V CRT mm Tolerance mm Check tolerance mm		+/-	3.100 13.00 0.05 0.10
Check value (P, R and H pump)			
Uact V CRT mm Tolerance mm Check tolerance mm			1.700 6.15 0.25 0.30
Setting point (M pump)			
Uact V CRT mm Tolerance mm Check tolerance mm			3.100 12.50 0.05 0.10
Check value (M pump)			
Uact V CRT mm Tolerance mm Check tolerance mm		+/-	1.700 5.50 0.25 0.30
Stop position (P, R and H pump)			
Uact V deener		ised and	ue with adjusting magnet control rod in
CRT mm Tolerance mm Check		+/-	o position. 0.75 0.25
tolerance mm	:	+/-	0.35
Stop position (M pump) Uact V Tolerance Volt CRT mm	: : :	+-	0,720 0,065 1,00
Starting position (M pump) Uact V	:		4,500

Tolerance Volt : +- 0,115 : 19,00 CRT mm Tolerance mm : +- 0,80

ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps)

Test with control rod in stop position

Engine speed min-1: 60 Amplitude V : 1.4 : +/- 0.6 Tolerance V Check

tolerance V : +/- 1.20

Engine speed min-1: 600

Difference Amplitude to

Amplitude V : max.1.4

### (C) INJECTION PUMP WITH POSITIONER

## TEST POINT V1

Rated speed rpm : 600 Uact V 2.900 Del. quantity cm3/1000 strokes : 337.0 Tolerance cm3/1000 strokes : + 1.0Check tolerance cm3/1000s. : ← 4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 11.0 FUEL DELIVERY CHARACTERISTICS

Rated speed rpm Uact V	: 1125 : 2.900
Del. quantity cm3/1000 strokes Tolerance	: 270.0
cm3/1000 strokes	: +- 3.0
Check tolerance cm3/1000s. Spreed	: +- 6.0
Tolerance cm3/1000 strokes Check tolerance	: 10.0
cm3/1000s.	: 14.0

J08

Rated speed rpm Uact V Del. quantity	: 900 : 1.600
cm3/1000 strokes	: 105.0
Tolerance cm3/1000 strokes Check tolerance	: +- 4.0
cm3/1000S. Spreed	: +- 6.0
Tolerance	
cm3/1000 strokes	: 10.0
Check tolerance cm3/1000s.	: 14.0
TEST POINT L1	
Rated speed rpm	: 250
Rated speed rpm Uact V	: 250 : 1.400
Uact V Tolerance Volt	
Uact V Tolerance Volt Check tolerance	: 1.400 : +- 0.060
Uact V Tolerance Volt Check tolerance Volt	: 1.400
Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes	: 1.400 : + 0.060 : + 0.060
Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	: 1.400 : + 0.060 : + 0.060 : 33.0
Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed	: 1.400 : + 0.060 : + 0.060 : 33.0
Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	: 1.400 : + 0.060 : + 0.060 : 33.0
Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	: 1.400 : + 0.060 : + 0.060 : 33.0 : + 3.0 : 5.0
Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes	: 1.400 : + 0.060 : + 0.060 : 33.0 : + 3.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 14.08.96 : ISO 4113

Combination No. : 0 402 996 309

Injection pump

Pump designation : PE6P130A720RS8521 EP type number : 0 412 936 200

Governor

Governer design. : RE30

Governer no. : 0 421 890 032

Cust. part No. : 309 4436

Customer-spec. information Customer : CUMMINS Motor : V30

Power KW

: 1007.0

#### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C : +- 2.0 Tolerance °C

Overflow valve : 2 417 413 084

Inlet press. bar :

Tolerance bar : +- 0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

208.5 bar Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

## BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar : + 1.0

Prestroke mm : 4.30Tolerance mm :  $\leftarrow 0.05$ 

Check

tolerance mm : +- 0.10

Rack travel in mm : 4.30 Tolerance mm : **←** 0.20

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

: +- 0.30 Tolerance

Check

: +- 0.75 tolerance °NW

Start of delivery blocking

Tolerance : **←** 0.10

Check

tolerance °NW : +- 0.29

Barrel no. : 1

Beginning of delivery differende

and maximum rack

travel : 10.00
Tolerance mm : +- 1.50 Difference ° CS : 6.00

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0 Setting point (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Setting point (M pump) Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (qmuq M) : 1.700 : 5.50 Uact V CRT mm Tolerance mm :  $\pm - 0.25$ Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet

and control rod in

stop position.

: 0.75

Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35 Stop position (qmuq M) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm : 1,00 Starting position (M pump) : 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00 Tolerance mm : + 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : Uact V : 900 3.050 Del. quantity cm3/1000 strokes : 434.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 5.0 Spreed Tolerance cm3/1000 strokes : 10.0 Check tolerance : 14.0 cm3/1000s.FUEL DELIVERY CHARACTERISTICS Rated speed rpm : Uact V : 750

3.000

CRT mm

Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: + 10.0 : + 12.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: +- 3.0
STARTING FUEL DEL	IVERY
Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance	: 100 : 4.700 : 270.0
7/4000 strains	

End of test specification sheet

cm3/1000 strokes : +- 19.0

: +- 22.0

40.0

50.0

Check tolerance cm3/1000s.

Check tolerance cm3/1000s.

cm3/1000 strokes :

Spreed Tolerance

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 29.11.95 : ISO 4113

Combination No. : 0 402 196 708

Injection pump

Pump designation : PES6P120A720RS3362

EP type number : 0 412 026 787

Governor

Governer design. : RE30

Governer no. : 0 421 890 029

Cust. part No. : RE 64860

Customer-spec. information

Customer : DEERE

Power KW

: 6076ADW31 : 140.0

#### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C

40

Tolerance °C : +- 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0 Tolerance bar :  $\leftarrow$  0.1

Test nozzle holde

assembly

: 1 688 901 101

Opening pressure

bar

Tolerance bar : + 1.5

208.5

Test lines : 1 680 750 015

Outside diameter : 6.0

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar: 17.0

Firing order : 1-5-3-6-2-

: 4

Phasing

: 0-60-120-180-240

: -300

Start of delivery mark

°NW after s.o.d. : 7.75 : +- 0.50 Tolerance

Check

tolerance  $^{\circ}NW$  : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack

travel : 15.00
Tolerance mm : + 0.50

Difference ° CS : 3.25

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

	+ (M pump)
Engine speed min-1: 0	- Uact V : 4,500 - Tolerance Volt : + 0,115 - CRT mm : 19,00 - Tolerance mm : + 0,80
	+ Tolerance Volt : + 0,115
Setting point	+ CRT mm : 19,00
(P, R and H pump)	+ Tolerance mm : + 0,80
	+
Uact V : 3.100 CRT mm : 13.00	+
CRT mm : 13.00	+ ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05	+ (All P and R pumps not
Check	+ Hand M pumps)
tolerance mm : +/- 0.10	+
	† Test with control rod
Check value	† in stop position
(P, R and H pump)	†
	+ Engine speed min-1: 60
4.700	+ Amplitude V : 1.4 + Tolerance V : +/- 0.6
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25	+ Tolerance V : +/- U.6
URI mm : 0.15	+ Check
Toterance mm : +/~ U.Z>	+ tolerance V : +/- 1.20
Check tolerance mm : +/- 0.30	Engine speed min-1: 600
tolerance mm : +/- U.SU	+ Difference
	+ Amplitude to
Setting point	Amplitude V : max.1.4
(M pump)	T Ampereuse v . max.1.4
(ii bailb)	I
Hart V : 3 100	I
Uact V : 3.100 CRT mm : 12.50	(C) INJECTION PUMP WITH POSITIONER
Tolerance mm : +/- 0.05	+ (c) INDECTION OF WITH TOSTITONER
Check	↓ TEST POINT V1
	, , , , , , , , , , , , , , , , , , , ,
	+
tolerance mm : +/- 0.10	+ Rated speed rpm : 1100
tolerance mm : +/- 0.10	+ Rated speed rpm : 1100 + Uact V : 2.800
tolerance mm : +/- 0.10 Check value	+ Rated speed rpm : 1100 + Uact V : 2.800 + Del. quantity
tolerance mm : +/- 0.10  Check value (M pump)	+ Rated speed rpm : 1100 + Uact V : 2.800 + Del. quantity + cm3/1000 strokes : 139.0
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700	+ Del. quantity + cm3/1000 strokes : 139.0 + Tolerance
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700	<pre>Del. quantity     cm3/1000 strokes : 139.0     Tolerance     cm3/1000 strokes : +- 1.0</pre>
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700	<pre>Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance</pre>
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check	<pre>Del. quantity     cm3/1000 strokes : 139.0     Tolerance     cm3/1000 strokes : +- 1.0     Check tolerance     cm3/1000s. : +- 4.0</pre>
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)	Del. quantity
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet	Del. quantity
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0 Tolerance
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : +- 3.0
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : +- 3.0 Check tolerance
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position (M pump)	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : +- 3.0 Check tolerance cm3/1000s. : +- 6.0
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position (M pump)  Uact V : 0,720	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : +- 3.0 Check tolerance
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35  Stop position (M pump)  Uact V : 0,720 Tolerance Volt : +- 0,065	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000S. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : +- 3.0 Check tolerance cm3/1000S. : +- 6.0 Spreed
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position (M pump)  Uact V : 0,720	Del. quantity cm3/1000 strokes : 139.0  Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : +- 3.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 8.0
tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700  CRT mm : 5.50  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position (M pump)  Uact V : 0,720  Tolerance Volt : +- 0,065	Del. quantity cm3/1000 strokes : 139.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000S. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 700 Uact V : 2.800 Del. quantity cm3/1000 strokes : 141.0 Tolerance cm3/1000 strokes : +- 3.0 Check tolerance cm3/1000S. : +- 6.0 Spreed Tolerance

:	425 1.580
:	22.5
: +-	3.0
: +	6.0
:	6.0
:	10.0
	: +-

## TEST POINT L1

Rated speed rpm	:	425
Uact V	:	1.580
Tolerance Volt	: +	-0.060
Check tolerance		
Vol+		_ 0 060

## STARTING FUEL DELIVERY

Rated speed rpm	:	100
Uact V	:	4.600
Del. quantity		
cm3/1000 strokes	:	105.0
Tolerance		40.0
cm3/1000 strokes	: +-	- 10.0
Check tolerance		47 O
cm3/1000s.	: +-	- 13.0

#### Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 07.10.96 Test oil : ISO 4113

Combination No. : 0 402 996 312

Injection pump

Pump designation : PES6P120A720RS8512

: -5

EP type number : 0 412 926 215

Governor

Governer design. : RE30

Governer no. : 0 421 890 024

Cust. part No. : 313 GC 5225 P1

Customer—spec. information Customer : MACK Motor : E7

## TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C : 40Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 3 413 359 008

Inlet press. bar : 3.0Tolerance bar :  $\leftarrow 0.1$ 

Test nozzle holde

assembly : 1 688 901 103

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : + 1.0

Prestroke mm : 4.60
Tolerance mm : + 0.05
Check

rueck

tolerance mm : +- 0.10

Rack travel in mm : 12.00 Tolerance mm : + 0.20

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance :  $\leftarrow$  0.30

Check

tolerance "NW :  $\leftarrow$  0.75

Start of delivery blocking

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm—up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR **POSITION** Engine speed min-1: Setting point (P, R and H pump) : 3.1. 13.00 Uact V CRT mm 3.100 Tolerance mm : +/- 0.05 Check : +/- 0.10 tolerance mm Check value (P, R and H pump) 1.700 Uact V CRT mm 6.15 : +/- 0.25 Tolerance mm Check tolerance mm :  $\pm - 0.30$ Setting point (m pump) 3.100 Uact V 12.50 CRT mm Tolerance mm : +/- 0.05 Check : +/- 0.10 tolerance mm Check value (gmua M) 1.700 Uact V CRT mm 5.50 : +/- 0.25 Tolerance mm Check tolerance mm :  $\pm$  +/- 0.30 Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm Tolerance mm : +/- 0.25 Check

CRT mm : 1,00 Starting position (amuq M) 4,500 Uact V : + 0,115 : 19,00 Tolerance Volt CRT mm Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : Tolerance V : 1.4 : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 900 Uact V 3.050 Del. quantity cm3/1000 strokes : 310.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 14.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm 625 Uact V 3.260 Del. quantity cm3/1000 strokes : 392.0 Tolerance cm3/1000 strokes : + 10.0Check tolerance cm3/1000s. : **←** 12.0

Spreed

: +/- 0.35

tolerance mm

Tolerance		
cm3/1000 strokes	:	16.0
Check tolerance		
cm3/1000s.	:	18.0

## TEST POINT L1

Rated speed rpm Rated speed rpm Uact V Uact V Tolerance Volt Check tolerance	: : : : : : : : : : : : : : : : : : : :	←	325 325 1.310 1.310 0.060
Volt	:	+-	0.070
Del. quantity			
cm3/1000 strokes	:		33.0
Del. quantity			
cm3/1000 strokes	:		33.0
Tolerance		+-	3.0
cm3/1000 strokes Tolerance	•	_	3.0
cm3/1000 strokes Spreed	:	+-	3.0
Tolerance			
cm3/1000 strokes	:		6.0
Tolerance			
cm3/1000 strokes	:		6.0
Check tolerance			44.0
cm3/1000S.	:		14.0
Check tolerance cm3/1000s.	:		14.0

## STARTING FUEL DELIVERY

Rated speed rpm	:	100
Uact V	:	4.700
Del. quantity		
cm3/1000 strokes	:	195.0
Tolerance		
cm3/1000 strokes	: +-	19.0
Check tolerance		
cm3/1000s.	: +-	22.0
Spreed		
Tolerance		
cm3/1000 strokes	:	40.0
Check tolerance		
cm3/1000s.	:	50.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 31.05.96 : ISO 4113

Combination No. : 0 402 896 014

Injection pump

Pump designation : PE6P120A720RS8029

EP type number : 0 412 826 028

Governor

Governer design. : RE30

Governer no. : 0 421 890 021

Cust. part No. : 1361126

Customer-spec. information Customer : SCANIA

Motor

: DSC1124

TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

Tolerance °C

: 40 : + 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 104

Opening pressure

bar

: 251.5

Tolerance bar : +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0

x Length mm :

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm

2.85

Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50

Tolerance mm : +- 1.50

Firing order

: 1-5-3-6-2-

Phasing

: 0-60-120-180-240

: -300

Tolerance

: **←** 0.30

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Start of delivery mark

Barrel no. : 1

Vibration

damper

(RoBo diaphragm) : 3.1

(B) POSITIONER TESTING Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR **POSITION** Engine speed min-1: Setting point (P, R and H pump) : 3.15 · 13.00 Uact V CRT mm 3.100 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) 1.700 Uact V CRT mm 6.15 : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Setting point (amuq M) 3.100 Uact V 12.50 CRT mm : +/- 0.05 Tolerance mm Check tolerance mm. : +/- 0.10 Check value (amua M) 1.700 Uact V CRT mm 5.50 : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in stop position. CRT mm 0.75 : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.35 Stop position (M pump) Uact V 0,720 Tolerance Volt : +- 0,065

CRT mm : 1,00 Starting position (M pump) Uact V 4,500 Tolerance Volt : + 0,115CRT mm 19,00 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 Uact V 3.500 Del. quantity cm3/1000 strokes : 340.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm 900 Uact V 3.500 Del. quantity cm3/1000 strokes : 309.0 Tolerance cm3/1000 strokes : +- 4.0Check tolerance : +cm3/1000s. 6.0

TEST POINT L1

Rated speed rpm	:		250
Uact V	:		1.640
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Del. quantity			
cm3/1000 strokes	:		16.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		4.0
Check tolerance			
cm3/1000s.	:		8.0

# STARTING FUEL DELIVERY

•	:	100 3.000
Uact V Del. quantity	•	3.000
cm3/1000 strokes Tolerance	:	245.0
cm3/1000 strokes Check tolerance	: +-	20.0
cm3/1000s.	: +-	24.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 11.10.96 : ISO 4113

Combination No. : 0 402 796 037

Injection pump

Pump designation : PES6H110/320RS13 EP type number : 0 412 716 003

Governor

Governer design. : RE36

Governer no. : 0 421 890 363

Cust. part No. : 51.11103-7482

Customer-spec. information

Customer : MAN

Motor

: D0826 LF13/LFL09

Power KW

: 191.0

## TEST BENCH REQUIREMENTS

Inlet line : 3(EHAB)

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 073

Inlet press. bar :

3.0

Tolerance bar :  $\leftarrow$  0.1

Test nozzle holde

assembly

: 1 688 901 103

Opening pressure

Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

J22

x inside diameter: 2.0

x length mm :

600

REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar :

Tolerance bar : +- 1.0

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50

Tolerance mm : +- 0.50

Firing order

: 1-5-3-6-2-

: 4

Phasing

: 0-60-120-180-240

: -300

Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

Start of delivery blocking

Tolerance : +- 0.10

Check

tolerance °NW

: +- 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0 Setting point (P, R and H pump) 3.100 Uact V 13.00 CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 Uact V CRT mm 6.15 Tolerance mm :  $\pm -0.25$ Check tolerance mm :  $\pm -0.30$ Setting point (amuq M) 3.100 Uact V 12.50 CRT mm Tolerance mm :  $\pm$  :  $\pm$  0.05 Check : +/- 0.10 tolerance mm Check value (qmuq M) 1.700 Uact V CRT mm 5.50 Tolerance mm :  $\pm -0.25$ Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm : +/- 0.25 Tolerance mm Check

tolerance mm :  $\pm -0.35$ Stop position (qmuq M) Uact V 0,720 Tolerance Volt : +- 0,065 CRT mm 1,00 Starting position (M pump) Uact V 4,500 Tolerance Volt : + 0,115CRT mm : 19,00 Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 850 Uact V 2.490 Prestroke solenoid Stroke mm 11.10 Del. quantity cm3/1000 strokes : 224.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance 9.0 cm3/1000s. FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 800 1.580 Uact V

Prestroke solenoid
Stroke mm : 7.70 Del. quantity
cm3/1000 strokes : 95.0 Check tolerance
cm3/1000s. : +- 8.0 Spreed
Check tolerance cm3/1000s. : 7.0
Rated speed rpm : 1150
Uact V : 2.440 Prestroke solenoid
Stroke mm : 9.30
Del. quantity cm3/1000 strokes : 206.0
cm3/7000 strokes : 206.0 Tolerance
cm $3/1000$ strokes : $\leftarrow$ 6.0
Check tolerance cm3/1000s. : +- 10.0
Rated speed rpm : 600
Uact V : 2.220
Prestroke solenoid
Stroke mm : 12.10 Del. quantity
cm3/1000 strokes : 207.0
Tolerance cm3/1000 strokes : +- 6.0
Check tolerance cm3/1000s. : +- 10.0
Rated speed rpm : 500
Rated speed rpm : 500 Uact V : 1.750
Prestroke solenoid
Stroke mm : 9.80
Del. quantity cm3/1000 strokes : 135.0
Tolerance cm3/1000 strokes : +- 5.0
Check tolerance
cm $3/1000$ s. : $\leftarrow$ 9.0
TEST POINT L1
Rated speed rpm : 300
Uact V : 1.310
Tolerance Volt : + 0.060
Check tolerance Volt : +- 0.080
Prestroke solenoid Stroke mm : 11.10
Del. quantity
cm3/1000 strokes : 26.0 Tolerance
cm3/1000 strokes : +- 3.0 Spreed
-p. 000

Tolerance		
cm3/1000 strokes	:	7.0
Check tolerance		
cm3/1000S.	:	11.0

## STARTING FUEL DELIVERY

Rated speed rpm	:	100	
Uact V	:	2.050	
Prestroke solenoi	d		
Stroke mm	- :	5.50	
Del. quantity			
	:	130.0	
Tolerance			
cm3/1000 strokes	: +-	- 8.0	
Check tolerance			
cm3/1000s.	: +	- 12.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 11.10.96 : ISO 4113

Combination No. : 0 402 796 039

Injection pump

Pump designation : PES6H110/320RS13-1 EP type number : 0 412 716 004

Governor

Governer design. : RE36

Governer no. : 0 421 890 363

Cust. part No. : 51.11103-7529

Customer-spec. information

Customer : MAN

Motor

: b0826 LF13/LFL09

: 191.0 Power KW

#### TEST BENCH REQUIREMENTS

Inlet line : 3-unten

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 082

Inlet press. bar :

3.0

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 103

Opening pressure

bar

208.5

Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

J25

x inside diameter : 2.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

: 8.00 Prestroke mm : +- 0.05 Tolerance mm

Check

: +- 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance : <del>+-</del> 0.50

Check

tolerance  $^{\circ}NW$  : +- 0.75

## Start of delivery blocking

Tolerance : +- 0.10

Check

tolerance °NW : +- 0.75

Barrel no.

: 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V 3.100 13.00 CRT mm Tolerance mm : +/- 0.05 Check : +/- 0.10 tolerance mm Check value (P, R and H pump) 1.700 Uact V CRT mm 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/~ 0.30 Setting point (amua M) Uact V 3.100 12.50 CRT mm Tolerance mm :  $\pm$  +/- 0.05 Check : +/~ 0.10 tolerance mm Check value (qmuq M) 1.700 Uact V 5.50 CRT mm : +/~ 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in stop position.

0.75

: +/- 0.25

tolerance mm : +/~ 0.35 Stop position (M pump) Uact V 0,720 Tolerance Volt : + - 0,065CRT mm 1,00 Starting position (M pump) Uact V 4,500 Tolerance Volt : +- 0,115 : 19,00 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 850 Uact V 2,490 Prestroke solenoid Stroke mm 11.10 Del. quantity cm3/1000 strokes : 224.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +-4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. 9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 800 Uact V 1.580

CRT mm

Check

Tolerance mm

Prestroke solenoid Stroke mm : 7.70 Del. quantity cm3/1000 strokes : 95.0 Check tolerance cm3/1000s. : + 8.0 Spreed Check tolerance cm3/1000s. : 7.0
Rated speed rpm : 1150 Uact V : 2.440 Prestroke solenoid Stroke mm : 9.30 Del. quantity cm3/1000 strokes : 206.0 Tolerance cm3/1000 strokes : + 6.0 Check tolerance cm3/1000s. : + 10.0
Rated speed rpm : 600 Uact V : 2.220 Prestroke solenoid Stroke mm : 12.10 Del. quantity cm3/1000 strokes : 207.0 Tolerance cm3/1000 strokes : + 6.0 Check tolerance cm3/1000S. : + 10.0
Rated speed rpm : 500 Uact V : 1.750 Prestroke solenoid Stroke mm : 9.80 Del. quantity cm3/1000 strokes : 135.0 Tolerance cm3/1000 strokes : + 5.0 Check tolerance cm3/1000S. : + 9.0  TEST POINT L1
Rated speed rpm : 300 Uact V : 1.310 Tolerance Volt : +- 0.060 Check tolerance Volt : +- 0.080 Prestroke solenoid Stroke mm : 11.10 Del. quantity cm3/1000 strokes : 26.0 Tolerance cm3/1000 strokes : +- 3.0 Spreed

Tolerance		
cm3/1000 strokes	:	7.0
Check tolerance		
cm3/1000s.	:	11.0
	:	11.0

## STARTING FUEL DELIVERY

Rated speed rpm	:	100	
Uact V	;	2.050	
Prestroke solenoi	d		
Stroke mm	:	5.50	
Del. quantity			
cm3/1000 strokes	:	130.0	
Tolerance			
cm3/1000 strokes	: +-	- 8.0	
Check tolerance			
cm3/1000S.	: +-	- 12.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 19.11.96 : ISO 4113

Combination No. : 0 402 698 033

Injection pump

Pump designation : PE8H12O/32OLS3-2 EP type number : 0 412 628 003

Governor

Governer design. : RE36

Governer no. : 0 421 890 359

Cust. part No. : 0250745602

Customer-spec. information

Customer : MB-NFZ Motor

: OM 442 LA

## TEST BENCH REQUIREMENTS

Inlet line : 3.2 ELAB

Test oil inlet

temp. °C

40

Tole:ance °C

: <del>+-</del> 2.0

Overflow valve : 2 417 413 082

Inlet press. bar :

3.0

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

Tolerance bar : + 1.5

: 208.5

Test lines : 1 680 750 089

Outside diameter : 8.0

(B) POSITIONER TESTING

Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

600

x inside diameter: 3.0

x length mm :

## REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : +- 1.0

Prestroke mm : 7.00 Tolerance mm : + 0.05 Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  0.50

: 8-7-2-6-3 Firing order

: - 5- 4- 1

Phasing : 0-45-90-135-180

: -225-270-315 : +- 0.50

Check

Tolerance

tolerance °NW : +- 0.75

## Start of delivery mark

Tolerance : +- 0.50

Check

tolerance °NW : **←** 0.75

Barrel no. : 8

TESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V 3.100 13.00 CRT mm Tolerance mm : +/- 0.05 Check : +/- 0.10tolerance mm Check value (P, R and H pump) Uact V 1.700 CRT mm 6.15 Tolerance mm : +/- 0.25 Check : +/- 0.30 tolerance mm Setting point (M pump) Uact V 3.100 12.50 CRT mm : +/- 0.05 Tolerance mm Check : +/- 0.10 tolerance mm Check value (M pump) 1.700 Uact V 5.50 CRT mm : +/- 0.25Tolerance mm Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm : +/- 0.25 Tolerance mm Check : +/- 0.35tolerance mm Stop position

0,720

1,00 CRT mm Starting position (mpump) 4,500 Uact V Tolerance Volt : +- 0,115 19,00 CRT mm : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 1.4 Amplitude V : +/- 0.6 Tolerance V Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 750 Uact V 2.800 Prestroke solenoid Stroke mm 7.40 Del. quantity cm3/1000 strokes : 341.0 Tolerance cm3/1000 strokes : +-1.0 Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance 9.0 cm3/1000s.FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 950 2.900 Uact V Prestroke solenoid Stroke mm 8.00 Del. quantity cm3/1000 strokes : 328.0 Tolerance cm3/1000 strokes :  $\leftarrow$  3.0

K01

(M pump) Uact V

Tolerance Volt : + 0,065

Check tolerance cm3/1000S.	: ← 6.0
Rated speed rpm Uact V	: 550 : 2.700
Prestroke solenoi Stroke mm	: 9.50
Del. quantity cm3/1000 strokes Tolerance	: 348.0
cm3/1000 strokes Check tolerance	: +- 3.0
cm3/1000S.	: <del>+-</del> 6.0
Rated speed rpm Jact V	: 630 : 2.000
Prestroke solenoi	
Stroke mm Del. quantity	
cm3/1000 strokes	: 201.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt	: 300 : 1.500 : +- 0.060
Check tolerance Volt	: +- 0.060
Prestroke solenoi Stroke mm	d : 8.00
Del. quantity cm3/1000 strokes	: 31.0
Tolerance cm3/1000 strokes Spreed	: +- 3.0
Tolerance cm3/1000 strokes	: 6.0
Check tolerance cm3/1000s.	: 9.0
STARTING FUEL DEL	IVERY
Rated speed rpm Jact V Prestroke solenoi	: 100 : 1.900
Stroke mm	: 10.00
Del. quantity cm3/1000 strokes	: 108.0
Tolerance cm3/1000 strokes	: +- 10.0

Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 21.11.96 : ISO 4113

Combination No. : 0 401 496 003

Injection pump

Pump designation : PE6R120/720RS1504

EP type number : 0 411 426 003

Governor

Governer design. : RE31

Governer no. : 0 421 890 200

Cust. part No. : 1556415

: <del>-P</del>10v20.11.96

Customer-spec, information

Customer

: VOLVO-TRUCK

Motor

: TD 164

Power KW

: 382.0

TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

temp. °C

40

Tolerance °C

Overflow valve : 2 417 413 078

Inlet press. bar :

2.5

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

: 208.5

Tolerance bar

: +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter :

3.0

x length mm :

600

REMARKS

Pump-specific values in Section (B)

must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar :

Tolerance bar : +- 1.0

Prestroke mm : 5.45
Tolerance mm : + 0.05

Check

tolerance mm

: +- 0.10

Rack travel in mm : 10.50

Tolerance mm :  $\leftarrow$  0.50

Firing order

: 1-5-3-6-2-

: 4

Phasing

: 0-60-120-180-240

: -300

Tolerance

: +- 0.30

Check

tolerance °NW : +- 0.75

Start of delivery mark

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR **POSITION** Engine speed min-1: Setting point (P, R and H pump) : 3.100 : 13.00 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 Uact V 6.15 CRT mm : +/- 0.25 Tolerance mm Check tolerance mm :  $\pm -0.30$ Setting point (dmpd M) : 3... · 12.50 Uact V 3.100 CRT mm : +/- 0.05 Tolerance mm Check tolerance mm : +/- 0.10 Check value (mpump) 1.700 Uact V 5.50 CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm

: +/- 0.25

tolerance mm :  $\pm - 0.35$ Stop position (amuq M) Uact V 0,720 Tolerance Volt : +- 0,065 1,00 Starting position (M pump) 4,500 Uact V Tolerance Volt : **←** 0,115 19,00 CRT mm Tolerance mm : + 0.80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 525 Uact V 2.950 Del. quantity cm3/1000 strokes : 390.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +-Spreed Tolerance cm3/1000 strokes : 6.0 Check tolerance cm3/1000S. 10.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm 900 Uact V 3.240 Del. quantity cm3/1000 strokes : 386.0

Check

Tolerance mm

Tolerance cm3/1000 strokes	: ← 3.0
Check tolerance cm3/1000s. Spreed	: <del></del> 6.0
Tolerance cm3/1000 strokes	: 9.0
Check tolerance cm3/1000s.	: 13.0
Rated speed rpm	: 900
Uact V Del. quantity	: 2.000
cm3/1000 strokes Tolerance	: 163.0
cm3/1000 strokes Check tolerance	: <b>←</b> 3.0
cm3/1000S.	: +- 6.0
TEST POINT L1	
Rated speed rpm Rated speed rpm Uact V Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Del. quantity cm3/1000 strokes Tolerance	
cm3/1000 strokes Tolerance	: +- 3.0
cm3/1000 strokes Spr <del>ee</del> d	: ← 3.0
Tolerance cm3/1000 strokes	: 7.0
Tolerance cm3/1000 strokes	: 7.0
Check tolerance cm3/1000S.	: 11.0
Check tolerance cm3/1000s.	: 11.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 22.11.96 Edition : ISO 4113 Test oil

Combination No. : 0 402 798 201

Injection pump

Pump designation : PES8H120/720LS1003

EP type number : 0 412 728 201

Governor

Governer design. : RE33

Governer no. : 0 421 890 358

Cust. part No. : 1364711

Customer-spec. information Customer : SCANIA Motor : DSC 141 : DSC 1413 : 390.0 Power KW

### TEST BENCH REQUIREMENTS

Inlet line : 4(EHAB)

Test oil inlet

temp. °C 40 Tolerance °C 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 3.0 Tolerance bar : +- 0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0 x length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 8.00 Tolerance mm : + 0.05 Check

tolerance mm : **←** 0.10

Rack travel in mm: 10.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-2-7-3-4 : - 5- 6- 8

: 0-45-90-135-180 Phasing

: -225-270-315 : +- Ū.50

Tolerance Check

tolerance °NW : **←** 0.75

Start of delivery blocking

Tolerance : +- 0.10 Check

tolerance °NW : **←** 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

		+ CRT mm : 1,00
TESTING & SETTI POSITION	NG RACK TRAVEL SENSOR	+ Stanting parities
Engine speed mi	n-1: 0	Tolerance mm : + 0.80
•		+ Tolerance Volt : + 0,115
Setting point (P, R and H pum	<b>p</b> )	+ CRI mm : 19,00 + Tolerance mm : + 0,80
	7 400	+
Uact V CRT mm	: 3.100	FUCTURE OPERA CINICOD
CRT mm Tolerance mm	: 13.00	+ ENGINE-SPEED SENSOR + (All P and R pumps not
Check		+ CACC Parid R pumps not + Hand M pumps)
tolerance mm	: +/- 0.10	+ Test with control rod
Check value		† in stop position
(P, R and H pum	p)	†
		+ Engine speed min-1: 60
	4 700	Amplitude V : 1.4 Tolerance V : +/- 0.6
Uact V	: 1.700 : 6.15 : +/- 0.25	+ Iolerance V : +/- U.6
CRT mm	: 6.15	+ Check
Tolerance mm Check	: +/- 0.25	tolerance V : +/- 1.20
tolerance mm	: +/- 0.30	Engine speed min-1: 600
		+ Difference
		+ Amplitude to
Setting point		Amplitude V : max.1.4
(M pump)		†
Uact V	. 3.100	
CRT mm	: 3.100 : 12.50	(C) INJECTION PUMP WITH POSITIONER
CRT mm Tolerance mm	: +/- 0.05	+
Check		TEST POINT V1
	: +/- 0.10	+
tolerance mm	: +/- 0.10	+
	: +/- 0.10	Rated speed rpm : 700 Uact V : 3.150
tolerance mm	: +/- 0.10	+ Rated speed rpm : 700 + Uact V : 3.150 + Prestroke solenoid
tolerance mm Check value		+ Rated speed rpm : 700 + Uact V : 3.150 + Prestroke solenoid
tolerance mm Check value	: 1.700	Rated speed rpm : 700 Uact V : 3.150 Prestroke solenoid Stroke mm : 7.60 Del. quantity
tolerance mm Check value (M pump)	: 1.700 : 5.50	+ Rated speed rpm : 700 + Uact V : 3.150
tolerance mm Check value (M pump) Uact V CRT mm Tolerance mm	: 1.700	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance
tolerance mm Check value (M pump)  Uact V CRT mm Tolerance mm Check	: 1.700 : 5.50 : +/- 0.25	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000 strokes : +- 1.0
tolerance mm Check value (M pump) Uact V CRT mm Tolerance mm	: 1.700 : 5.50	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000 strokes : +- 1.0  Check tolerance
tolerance mm Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm	: 1.700 : 5.50 : +/- 0.25	Rated speed rpm : 700 Uact V : 3.150 Prestroke solenoid Stroke mm : 7.60 Del. quantity cm3/1000 strokes : 344.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 6.0
tolerance mm  Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30	Rated speed rpm : 700 Uact V : 3.150 Prestroke solenoid Stroke mm : 7.60 Del. quantity cm3/1000 strokes : 344.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 6.0 Spreed
tolerance mm Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000 strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance
tolerance mm Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pum)	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30	Rated speed rpm : 700 Uact V : 3.150 Prestroke solenoid Stroke mm : 7.60 Del. quantity cm3/1000 strokes : 344.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 8.0
tolerance mm  Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm  Stop position (P, R and H pum)  Uact V	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30 p) : Value with	Rated speed rpm : 700 Uact V : 3.150 Prestroke solenoid Stroke mm : 7.60 Del. quantity cm3/1000 strokes : 344.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance
tolerance mm  Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm  Stop position (P, R and H pum)  Uact V	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30 p) : Value with	Rated speed rpm : 700 Uact V : 3.150 Prestroke solenoid Stroke mm : 7.60 Del. quantity cm3/1000 strokes : 344.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0
tolerance mm  Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm  Stop position (P, R and H pum)  Uact V	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30 p) : Value with hergised adjusting magnet and control rod in	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000 strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance
tolerance mm Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pum)  Uact V deel	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30  p)  : Value with hergised adjusting magnet and control rod in stop position.	Rated speed rpm : 700 Uact V : 3.150 Prestroke solenoid Stroke mm : 7.60 Del. quantity cm3/1000 strokes : 344.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. : 12.0
Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pum)  Uact V  deel	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30   P)  : Value with hergised adjusting magnet and control rod in stop position. : 0.75	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000 strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance  cm3/1000 strokes : 12.0  FUEL DELIVERY CHARACTERISTICS
Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pum)  Uact V  deed  CRT mm Tolerance mm	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30  p)  : Value with hergised adjusting magnet and control rod in stop position.	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000 strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance  cm3/1000 strokes : 12.0  FUEL DELIVERY CHARACTERISTICS
Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pum)  Uact V  CRT mm Tolerance mm	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30   Do : Value with the magnet and control rod in stop position. : 0.75 : +/- 0.25	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000 strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance  cm3/1000 strokes : 12.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 3.450
Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pum)  Uact V  deed  CRT mm Tolerance mm	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30   Description: Value with the mand control rod in stop position. : 0.75 : +/- 0.25	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000 strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance  cm3/1000 strokes : 12.0  FUEL DELIVERY CHARACTERISTICS
Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm  Stop position (P, R and H pum)  Uact V  CRT mm Tolerance mm Check tolerance mm	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30   Do : Value with the magnet and control rod in stop position. : 0.75 : +/- 0.25	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance  cm3/1000s. : 12.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 3.450  Prestroke solenoid  Stroke mm : 8.20  Del. quantity
Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm Stop position (P, R and H pum)  Uact V  CRT mm Tolerance mm	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30   Do : Value with the magnet and control rod in stop position. : 0.75 : +/- 0.25	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000strokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance  cm3/1000s. : 12.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 3.450  Prestroke solenoid  Stroke mm : 8.20
Check value (M pump)  Uact V CRT mm Tolerance mm Check tolerance mm  Stop position (P, R and H pum)  Uact V  deel  CRT mm Tolerance mm  Check tolerance mm  Stop position	: 1.700 : 5.50 : +/- 0.25 : +/- 0.30   : Value with nergised adjusting magnet and control rod in stop position. : 0.75 : +/- 0.25 : +/- 0.35	Rated speed rpm : 700  Uact V : 3.150  Prestroke solenoid  Stroke mm : 7.60  Del. quantity  cm3/1000 strokes : 344.5  Tolerance  cm3/1000s trokes : +- 1.0  Check tolerance  cm3/1000s. : +- 6.0  Spreed  Tolerance  cm3/1000 strokes : 8.0  Check tolerance  cm3/1000s. : 12.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950  Uact V : 3.450  Prestroke solenoid  Stroke mm : 8.20  Del. quantity

Check tolerance		
cm3/1000s.	: +-	7.0

# TEST POINT L1

Rated speed rpm Uact V	:		250 1.400
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Prestroke solenoi	d		
Stroke mm	:		9.50
Del. quantity			
cm3/1000 strokes	:		31.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		4.0
Check tolerance			
cm3/1000s.	:		8.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 30.08.95 : ISO 4113

Combination No. : 0 402 795 203

Injection pump

Pump designation: PES5H120/720/3LS1004

EP type number : 0 412 725 203

Governor

Governer design. : RE33

Governer no. : 0 421 890 364

Cust. part No. : 51.111103-7476

Customer-spec. information

Customer : MAN Motor

: D 2865 LF 09

Power KW

: 250.0

## TEST BENCH REQUIREMENTS

Inlet line : 4(EHAB)

Test oil inlet

temp. °C

Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 073

Inlet press. bar :

3.0

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

208.5

Tolerance bar

: +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

K09

x inside diameter: 3.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm 7.65 : + 0.05Tolerance mm

Check

: +- 0.10tolerance mm

Rack travel in mm: 10.50 Tolerance mm : ← 0.50

Prestroke mm 10.00 : + 0.05 Tolerance mm

Check

: +- 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Start of delivery blocking

Tolerance :  $\leftarrow$  0.10

Barrel no. : 5

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR **POSITION** Engine speed min-1: Setting point (P, R and H pump) Uact V CRT mm : 3.100 : 13.00 3.100 Tolerance mm : +/- 0.05 Check : +/- 0.10 tolerance mm Check value (P, R and H pump) Uact V : 1.700 : 6.15 : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Setting point (M pump) 3.100 Uact V CRT mm 12.50 Tolerance mm : +/- 0.05 Check tolerance mm :  $\pm -0.10$ Check value (dmuq M) : 1.700 Uact V 5.50 CRT mm : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. CRT mm 0.75 Tolerance mm : +/- 0.25 Check

tolerance mm :  $\pm -0.35$ Stop position (M pump) Uact V : 0,720 : +- 0,065 Tolerance Volt CRT mm 1,00 Starting position (qmuq M) Uact V : 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 750 Uact V 3.350 Prestroke solenoid 10.00 Stroke mm Del. quantity cm3/1000 strokes : 332.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. 9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 750 Uact V 1.450

Prestroke solenoi	
Stroke mm	: 10.00
Del. quantity cm3/1000 strokes	: 74.0
Tolerance cm3/1000 strokes	: +- 4.0
Check tolerance cm3/1000S.	: +- 8.0
Spr <del>ee</del> d Tolerance	
cm3/1000 strokes	: 4.0
Check tolerance cm3/1000s.	: 8.0
Rated speed rpm	: 1000
Uact V	: 3.290
Prestroke solenoio	d : 8.00
Del. quantity	. 8.00
cm3/1000 strokes Tolerance	: 312.0
cm3/1000 strokes	: +- 4.0
Check tolerance cm3/1000S.	: <del>+-</del> 8.0
· · · · · · · · · · · · · · · · · · ·	
Rated speed rpm	: 500
Uact V	: 2.900
Prestroke solenoid	d : 9.20
Del. quantity	. 7.20
cm3/1000 strokes Tolerance	: 306.0
cm3/1000 strokes	: +- 5.0
Check tolerance cm3/1000s.	: +- 9.0
UND/ 10000.	,
Rated speed rpm	: 500
Uact V Prestroke solenoid	: 2.100
Stroke mm	: 6.20
Del. quantity cm3/1000 strokes	: 175.0
Tolerance cm3/1000 strokes	: +- 4.0
Check tolerance cm3/1000s.	: ← 8.0
TEST POINT L1	
Rated speed rpm	: 300
Uact V	: 1.500
Tolerance Volt Check tolerance	: +- 0.060
Volt	: +- 0.080
Prestroke solenoid	1
Stroke mm	: 7.20

Del. quantity		
cm3/1000 strokes	:	30.0
Tolerance		
cm3/1000 strokes	: +-	3.0
Spreed		
Tolerance		
cm3/1000 strokes	:	8.0
Check tolerance		
cm3/1000s.	:	12.0

# STARTING FUEL DELIVERY

Rated speed rpm Uact V	: :	100 2.450	
Prestroke solenoid			
Stroke mm	:	7.00	
Del. quantity cm3/1000 strokes Tolerance	:	182.0	
	: +-	10.0	
Check tolerance cm3/1000s.	: +-	14.0	

## Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 30.08.95 : ISO 4113

Combination No. : 0 402 796 202

Injection pump

Pump designation : PES6H120/720/3LS1005

EP type number : 0 412 726 202

Governor

Governer design. : RE33

Governer no. : 0 421 890 364

Cust. part No. : 51.111103-7477

Customer-spec. information

Customer : MAN

Motor : D 2866 LF 16 Power KW : 294.0

# TEST BENCH REQUIREMENTS

Inlet line : 4(EHAB)

Test oil inlet

temp. °C : 40Tolerance °C : +- 2.0

Overflow valve : 2 417 413 073

Inlet press. bar :

3.0

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

: 208.5

Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x length mm : 600

x inside diameter: 3.0

# REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 7.65 Tolerance mm : + 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm: 10.50 Tolerance mm :  $\leftarrow$  0.50

Prestroke mm : 10.00 Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm : +- 0.50

Firing order : 6-2-4-1-5-

Phasing : 0-60-120-180-240

: -300

Start of delivery blocking

Tolerance :  $\leftarrow$  0.10

Barrel no.

: 6

(B) POSITIONER TESTING Stop position Warm-up time: 3 minutes at (amuq M) n=600 min-1, Uact = 2.5 V0,720 Uact V : + - 0.065Tolerance Volt CRT mm 1,00 TESTING & SETTING RACK TRAVEL SENSOR Starting position POSITION (M pump) Uact V 4,500 Engine speed min-1: : ← 0,115 Tolerance Volt 19,00 Setting point CRT mm (P, R and H pump) Tolerance mm : +- 0,80 3.100 Uact V : 3.100 : 13.00 CRT mm ENGINE-SPEED SENSOR Tolerance mm :  $\pm -0.05$ (All P and R pumps not H and M pumps) Check tolerance mm : +/- 0.10 Test with control rod in stop position Check value (P, R and H pump) Engine speed min-1: 60 Amplitude V : 1.4 : 1.700 : +/- 0.6 Uact V Tolerance V CRT mm 6.15 Check tolerance V : +/- 1.20 : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 Setting point (qmuq M) : 3.100 : 12.50 3.100 Uact V CRT mm (C) INJECTION PUMP WITH POSITIONER Tolerance mm : +/- 0.05 TEST POINT V1 Check tolerance mm : +/- 0.10 750 Rated speed rpm : Check value Uact V 3.350 Prestroke solenoid (qmuq M) 10.00 Stroke mm Uact V 1.700 Del. quantity cm3/1000 strokes : 332.0 5.50 CRT mm Tolerance mm : +/- 0.25 Tolerance cm3/1000 strokes : +- 1.0Check tolerance mm :  $\pm -0.30$ Check tolerance cm3/1000s. : +- 4.0 Spreed Stop position (P, R and H pump) Tolerance cm3/1000 strokes : 5.0 : Value with Check tolerance Uact V deenergised adjusting magnet cm3/1000s. 9.0 and control rod in FUEL DELIVERY CHARACTERISTICS stop position. CRT mm 0.75 Rated speed rpm : : +/- 0.25 Tolerance mm 750 1.450 Check

: +/- 0.35

tolerance mm

Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000 strokes Check tolerance cm3/1000S.	: : : :	+-	
Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	:: : : : : : : : : : : : : : : : : : : :	+-	1000 3.290 8.00 312.0 4.0 8.0
Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	:::::::::::::::::::::::::::::::::::::::	<del>+-</del>	500 2.900 9.20 306.0 5.0 9.0
Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	:	+	
Check tolerance	:	+	300 1.500 0.060 0.080 7.20

Del. quantity		
cm3/1000 strokes	:	30.0
Tolerance		
cm3/1000 strokes	: +-	3.0
Spreed		
Tolerance		
cm3/1000 strokes	:	8.0
Check tolerance		
cm3/1000S.	:	12.0

# STARTING FUEL DELIVERY

Rated speed rpm	:	100	
Uact V	:	2.450	
Prestroke solenoi	d		
Stroke mm	:	7.00	
Del. quantity			
cm3/1000 strokes	:	182.0	
Tolerance			
cm3/1000 strokes	: +	- 10.0	
Check tolerance			
cm3/1000S.	: +-	- 14.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 01.12.95 : ISO 4113

Combination No. : 0 402 796 203

Injection pump

Pump designation : PES6H120/720/3LS1006

EP type number : 0 412 726 203

Governor

Governer design. : RE33

Governer no. : 0 421 890 365

Cust. part No. : 51.111103-7479

Customer-spec. information

Customer : MAN

Motor Power KW : D 2866 LUH 21

: 257.0

### TEST BENCH REQUIREMENTS

Inlet line : 4(EHAB)

Test oil inlet

temp. °C

40

temp. °C Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 073

Inlet press. bar :

3.0

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

Tolerance bar : + 1.5

208.5

Test lines : 1 680 750 089

Outside diameter : 8.0

K15

x inside diameter: 3.0

x Length mm :

600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

# BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar :  $\leftarrow$  1.0

Prestroke mm : 10.00Tolerance mm :  $\leftarrow 0.05$ 

Check

tolerance mm

: +- 0.10

Rack travel in mm : 10.50

Tolerance mm : + 0.50

Firing order : 6-2-4-1-5-

Phasing

: 0-60-120-180-240

: -300

Tolerance Check

: +- 0.50

tolerance °NW : +- 0.75

Start of delivery blocking

Barrel no. : 6

(B) POSITIONER TESTING

Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

**POSITION** 

(P, R and H pump) + Tolerance mm : + (	4,500 0,115 19,00 n.80
<del>+</del>	3,00
Uact V : 3.100 + ENGINE-SPEED SENSOR + ENGINE-SPEED SENSOR	
CRT mm : 13.00 + ENGINE-SPEED SENSOR	
Tolerance mm : +/- 0.05	
Check + H and M pumps)	
tolerance mm : $+/-0.10$	
+ Test with control rod	
Check value + in stop position	
(P, R and H pump)	_
+ Engine speed min-1: 60	0
Amplitude V	1.4
Uact V       : 1.700       + Tolerance V       : +/- (         CRT mm       : 6.15       + Check	J.6
CRT mm : 6.15 + Check	4 00
Tolerance mm : +/- 0.25 + tolerance V : +/- 1	1.20
Check	n
tolerance mm : +/- 0.30 + Engine speed min-1: 600 + Difference	J
Amplitude to	
Setting point + Amplitude V : max.1	1 4
(M pump)	1.7
(ii pump)	
Hart V : 3.100 ↓	
Uact V : 3.100 + ——————————————————————————————————	POSITIONER
Tolerance mm : +/- 0.05 +	
Check + TEST POINT V1	
tolerance mm : +/- 0.10 +	
Rated speed rpm : 75	
Check value + Uact V : 3.	50 . <b>3</b> 50
Check value + Uact V : 3.  (M pump) + Prestroke solenoid	. 350
Check value + Uact V : 3.  (M pump) + Prestroke solenoid + Stroke mm : 10	
Check value + Uact V : 3.  (M pump) + Prestroke solenoid + Stroke mm : 10  Uact V : 1.700 + Del. quantity	.350 0.00
Check value + Uact V : 3.  (M pump) + Prestroke solenoid + Stroke mm : 10  Uact V : 1.700 + Del. quantity	.350 0.00
Check value	.350 0.00 32.0
Check value	.350 0.00 32.0
Check value       —       Uact V       : 3.         (M pump)       —       Prestroke solenoid         Uact V       : 1.700       —       Del. quantity         CRT mm       : 5.50       —       cm3/1000 strokes : 33         Tolerance mm       : +/- 0.25       —       Tolerance         Check       —       cm3/1000 strokes : +-         tolerance mm       : +/- 0.30       —       Check tolerance	.350 0.00 32.0 1.0
Check value	.350 0.00 32.0 1.0
Check value       —       Uact V       : 3.         (M pump)       —       Prestroke solenoid         Uact V       : 1.700       —       Del. quantity         CRT mm       : 5.50       —       cm3/1000 strokes : 33         Tolerance mm       : +/- 0.25       —       Tolerance         Check       —       cm3/1000 strokes : +-         tolerance mm       : +/- 0.30       —       Check tolerance         Stop position       —       Spreed	.350 0.00 32.0 1.0
Check value (M pump)  Uact V : 3.  Uact V : 1.700	.350 0.00 32.0 1.0 4.0
Check value (M pump)  Uact V : 1.700	.350 0.00 32.0 1.0
Check value	.350 0.00 32.0 1.0 4.0
Check value	.350 0.00 32.0 1.0 4.0 5.0
Check value  (M pump)  Prestroke solenoid  Stroke mm : 10  Stroke mm : 10  Del. quantity  CRT mm : 5.50	.350 0.00 32.0 1.0 4.0 5.0
Check value	.350 0.00 32.0 1.0 4.0 5.0
Check value (M pump)  Uact V : 1.700	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS
Check value (M pump)  Uact V : 1.700	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS
Check value (M pump)  Uact V : 1.700	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS
Check value (M pump)  Uact V : 1.700	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS
Check value (M pump)  Uact V : 1.700	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS 50 450
Check value (M pump)  Uact V : 1.700	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS
Check value (M pump)  Uact V : 1.700	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS 
Check value	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS 50 450
Check value	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS 
Check value	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS 
Check value	350 0.00 32.0 1.0 4.0 5.0 9.0 STICS 

Tolerance		
cm3/1000 strokes Check tolerance	: 4.0	
cm3/1000s.	: 8.0	
		_
Rated speed rpm Uact V	: 1000 : 3.290	
Prestroke solenoi	id	
Stroke mm Del. quantity	: 8.00	
cm3/1000 strokes	: 317.0	
Tolerance cm3/1000 strokes	: + 4.0	
Check tolerance cm3/1000s.	: +- 8.0	
Rated speed rpm	: 500	
Uact V Prestroke solenoi	: 2.900 id	
Stroke mm	: 9.20	
Del. quantity cm3/1000 strokes	: 307.0	
Tolerance cm3/1000 strokes	: ← 5.0	
Check tolerance		
cm3/1000s.	: +- 9.0	
Rated speed rpm	: 500	_
Uact V	: 2.100	
Uact V Prestroke solenoi Stroke mm	: 2.100	
Uact V Prestroke solenoi	: 2.100 d	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance	: 2.100 d : 6.20 : 175.0	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	: 2.100 d : 6.20 : 175.0 : ← 4.0	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	: 2.100 d : 6.20 : 175.0	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	: 2.100 d : 6.20 : 175.0 : ← 4.0	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. TEST POINT L1 Rated speed rpm	: 2.100 d : 6.20 : 175.0 : ← 4.0 : ← 8.0 : 300	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. TEST POINT L1 Rated speed rpm Uact V	: 2.100 d : 6.20 : 175.0 : ← 4.0 : ← 8.0	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. TEST POINT L1 Rated speed rpm Uact V Tolerance Volt Check tolerance	: 2.100 d : 6.20 : 175.0 : ← 4.0 : ← 8.0 : 300 : 1.500 : ← 0.060	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. TEST POINT L1 Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi	: 2.100 d : 6.20 : 175.0 : + 4.0 : + 8.0  : 300 : 1.500 : + 0.060 : + 0.080 d	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm	: 2.100 d : 6.20 : 175.0 : + 4.0 : + 8.0  : 300 : 1.500 : + 0.060 : + 0.080	
Vact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Vact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes	: 2.100 d : 6.20 : 175.0 : + 4.0 : + 8.0  : 300 : 1.500 : + 0.060 : + 0.080 d	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity	: 2.100 d : 6.20 : 175.0 : + 4.0 : + 8.0  : 300 : 1.500 : + 0.060 : + 0.080 d : 7.20	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed	: 2.100 d : 6.20 : 175.0 : ← 4.0 : + 8.0  : 300 : 1.500 : ← 0.060 : ← 0.080 d : 7.20 : 36.0	
Uact V Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	: 2.100 d : 6.20 : 175.0 : ← 4.0 : + 8.0  : 300 : 1.500 : ← 0.060 : ← 0.080 d : 7.20 : 36.0	

STA	RTTN	IG.	FUEL	DFI	IVERY

Rated speed rpm Uact V	:	100 2.450	
Prestroke solenoi Stroke mm	d :	7.00	
Del. quantity cm3/1000 strokes	:	190.0	
Tolerance cm3/1000 strokes	: +-	10.0	
Check tolerance cm3/1000s.	: +-	- 14.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 12.12.95 : ISO 4113

Combination No. : 0 402 796 819

Injection pump

Pump designation : PES6P120A720RS7407 EP type number : 0 412 726 955

Governor

Governer design. : RE30

Governer no. : 0 421 890 037

Cust. part No. : RE 65679

Customer-spec. information Customer : DEERE : 6101HRW10 Motor Power KW : 266.0

# TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C 40 Tolerance °C : +- 2.0

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0 Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 103 assembly

Opening pressure

208.5 bar Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

# BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : + 1.0

Prestroke mm : 3.60 Tolerance mm : + 0.05 Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50 Tolerance mm : +- 0.50

Firing order : 1-5-3-6-2-: 4

Phasing : 0-60-120-180-240

Start of delivery blocking

\*NW after s.o.d. : 9.25 Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack

15.00 travel Difference ° CS : 3.75

K18

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V : 3.100 : 13.00 3.100 CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Setting point (M pump) Uact V 3.100 CRT mm 12.50 : +/- 0.05 Tolerance mm Check : +/- 0.10 tolerance mm Check value (dmind M) 1.700 Uact V 5.50 CRT mm : +/- 0.25 Tolerance mm Check : +/- 0.30 tolerance mm Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm : +/~ 0.25 Tolerance mm Check

tolerance mm :  $\pm -0.35$ Stop position (M pump) Uact V 0,720 : **←** 0,065 Tolerance Volt CRT mm 1,00 Starting position (M pump) Uact V 4,500 Tolerance Volt : + 0,115 : 19,00 CRT mm : +- 0.80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check : +/- 1.20 tolerance V 600 Engine speed min-1: Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 1050 Uact V 3.030 Del. quantity cm3/1000 strokes : 213.0 Tolerance cm3/1000 strokes : +- 1.0Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance 5.0 cm3/1000 strokes : Check tolerance 9.0 cm3/1000s. FUEL DELIVERY CHARACTERISTICS 700 Rated speed rpm Uact V 3.120 Del. quantity cm3/1000 strokes : 237.0

Tolerance cm3/1000 strokes	: ←	3.0
Check tolerance cm3/1000S. Spreed	: +-	6.0
Tolerance cm3/1000 strokes	:	8.0
Check tolerance cm3/1000s.	:	12.0

# TEST POINT L1

Rated speed rpm	:	450
Uact V	:	1.740
Tolerance Volt	:	<b>←</b> 0.060
Check tolerance		
Volt	:	← 0.060
Del. quantity		
cm3/1000 strokes	:	26.0
Tolerance		
cm3/1000 strokes	:	<b>←</b> 3.0
Spreed		
Tolerance		
cm3/1000 strokes	:	6.0
Check tolerance		
cm3/1000s.	:	10.0

# STARTING FUEL DELIVERY

Rated speed rpm	:	100
Uact V	:	4.550
Del. quantity		
cm3/1000 strokes	:	120.0
Tolerance		
cm3/1000 strokes	: +-	20.0
Check tolerance		
cm3/1000s.	: +-	25.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 20.12.96 : ISO 4113

Combination No. : 0 402 795 802

Injection pump

Pump designation : PES5P120A720/3LS7397

EP type number : 0 412 725 823

Governor

Governer design. : RE30

Governer no. : 0 421 890 035

Cust. part No. : 51.11103-7486

Customer-spec. information

Customer : MAN

Motor

: D2865 LUH08/LF10

Power KW

: 235.0

# TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 1 417 413 047

Inlet press. bar :

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

208.5

Tolerance bar

: **←** 1.5

Test lines

: 1 680 750 089

Outside diameter :

8.0

x Length mm :

x inside diameter: 3.0

600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm Tolerance mm

4.85

: +- 0.05

Check

tolerance mm

: **←** 0.10

Rack travel in mm : 13.00

Tolerance mm

: +- 0.50

Firing order

: 1-3-5-4-2

Phasing

: 0-72-144-216-288

Tolerance

: +- 0.50

Check

tolerance °NW

: +- 0.75

Start of delivery blocking

Tolerance

: +- 0.10

Check

tolerance °NW

: +- 0.75

Barrel no.

: 5

(B) POSITIONER TESTING

Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-1: 0 Setting point (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 3.100 Check tolerance mm :  $\pm -0.10$ Check value (P, R and H pump) Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Setting point (M pump) Check tolerance mm : +/- 0.10 Check value (M pump) : 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. CRT mm : 0.75 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.35$ Stop position (dmuq M) : 0,720 Uact v Tolerance Volt Uact V : +- 0,065 1,00 CRT mm Starting position

(M pump) : 19,00 CRT mm Tolerance mm : + 0.80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 750 3.100 Uact V Del. quantity cm3/1000 strokes : 285.0 Tolerance cm3/1000 street Check tolerance : +- 4.0 cm3/1000 strokes :  $\leftarrow$  1.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. 9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 1000 Uact V : Del. quantity 3.120 cm3/1000 strokes : 266.0 Tolerance cm3/1000 strokes :  $\leftarrow$  3.0 Check tolerance cm3/1000s.: +- 6.0

Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Check tolerance	: <del>+-</del> 5.0 : <del>+-</del> 9.0
cm3/1000s.  Rated speed rpm	: 12.0 : 500 : 1.950
Uact V Del. quantity cm3/1000 strokes Tolerance	: 118.0
cm3/1000 strokes Check tolerance cm3/1000s.	: + 4.0 : + 8.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance	: 325 : 1.470 : ← 0.060
Volt	: + 0.080
Del. quantity cm3/1000 strokes Tolerance	: 30.0
cm3/1000 strokes Spreed	: ← 3.0
Tolerance cm3/1000 strokes Check tolerance	: 8.0
cm3/1000s.	: 12.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 20.12.96 Test oil : ISO 4113

Combination No. : 0 402 795 803

Injection pump

Pump designation : PES5P120A720/3LS7418

EP type number : 0 412 725 824

Governor

Governer design. : RE30

Governer no. : 0 421 890 039

Cust. part No. : 51.11103-7511

Customer-spec. information

Customer : MAN

Motor : D 2865 LF 24

Power KW : 213.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp.  $^{\circ}$ C :

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0 Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 5.25 Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 13.00 Tolerance mm : +- 0.50

Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance :  $\leftarrow$  0.50

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Start of delivery blocking

Tolerance :  $\leftarrow$  0.10

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Barrel no. : 5

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-1: 0 Setting point (P, R and H pump) • Uact V 3.100 CRT mm 13.00 Tolerance mm : +/- 0.05 Check tolerance mm :  $\pm -0.10$ Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Setting point (m pump) : 3.100 : 12.50 Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (amua M) : 1.700 Uact V CRT mm 5.50 Tolerance mm :  $\pm - 0.25$ Check : +/- 0.30 tolerance mm Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. : 0.75 CRT mm : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.35Stop position (qmuq M) 0,720 Uact V : **←** 0,065 Tolerance Volt 1,00 CRT mm

(dmuq M) : 4,500 Uact V Tolerance Volt : + 0,115 : 19,00 CRT mm : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 750 3.100 Uact V Del. quantity cm3/1000 strokes : 271.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : **←** 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. 9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 1000 Uact V 3.120 Del. quantity cm3/1000 strokes : 252.0 Tolerance cm3/1000 strokes : +- 3.0Check tolerance cm3/1000s. : +- 6.0

Rated speed rpm :

Uact V

750

1.470

Starting position

Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance cm3/1000s.	: 83.0 : ← 5.0 : ← 9.0 : 12.0
Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 500 : 1.950 : 176.0 : + 4.0 : + 8.0
TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	: 325 : 1.470 : + 0.060 : + 0.080 : 40.0 : + 3.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 20.12.96 : ISO 4113

Combination No. : 0 402 795 804

Injection pump

Pump designation : PES5P120A720LS7434

EP type number : 0 412 725 825

Governor

Governer design. : RE30

Governer no.

: 0 421 890 042

Cust. part No. : 51.11103-7557

Customer-spec. information

Customer : MAN

Motor

: D 2865 LUH 09

Power KW

: 191.0

# TEST BENCH REQUIREMENTS

Inlet line

: 4.1

Test oil inlet

temp. °C

40

Tolerance °C

2.0

Overflow valve

: 1 417 413 047

Inlet press. bar :

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

208.5

Tolerance bar

: +- 1.5

Test lines

: 1 680 750 089

Outside diameter :

8.0

x length mm

3.0 വറ

#### REMARKS

Pump-specific values in Section (B) must be observed!

x inside diameter :

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

# BEGINNING OF DELIVERY

Test pressure bar :

Tolerance bar : +- 1.0

Prestroke mm

Tolerance mm

: +- 0.05

Check

tolerance mm

: +- 0.10

Rack travel in mm: 13.00 Tolerance mm

: +- 0.50

Firing order

: 1-3-5-4-2

Phasina

: 0-72-144-216-288

Tolerance

: +- 0.50

Check

tolerance °NW

: **←** 0.75

# Start of delivery blocking

Tolerance

: + - 0.10

Check

tolerance °NW

: **←** 0.75

5

Barrel no.

:

(B) POSITIONER TESTING

Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

	(14
Engine speed min-1: 0	+ (M pump) + Uart V : 4.500
Lighte speed into 1.	Uact V
Setting point	+ CRT mm : 19,00
(P, R and H pump)	Tolerance mm : + 0,80
Uact V : 3.100	†
Uact V : 3.100 CRT mm : 13.00	T ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05	+ (All P and R pumps not
Check	+ Hand M pumps)
tolerance mm : +/- 0.10	† <u> </u>
Check value	<pre>Test with control rod in stop position</pre>
(P, R and H pump)	+ III stop position
(1) It did it pumps	Engine speed min-1: 60
	Amplitude V : 1.4 Tolerance V : +/- 0.6
Uact V : 1.700	
CRT mm : 6.15	+ Check
Tolerance mm : +/- 0.25 Check	tolerance V : +/- 1.20
tolerance mm : +/- 0.30	Engine speed min-1: 600
	+ Difference
	+ Amplitude to
Setting point	Amplitude V : max.1.4
(dump)	Ī
Uact V : 3.100	
CRT mm : 12.50	(c) INJECTION PUMP WITH POSITIONER
Tolerance mm : +/- 0.05	+
Check	TEST POINT V1
tolerance mm : +/- 0.10	Rated speed rpm : 750
Check value	Uact V : 3.100
(M pump)	+ Del. quantity
	+ cm3/1000 strokes : 271.0
Uact V : 1.700	+ Tolerance
CRT mm : 5.50 Tolerance mm : +/- 0.25	cm3/1000 strokes : +- 1.0 Check tolerance
Check	- cm3/1000s. : +- 4.0
tolerance mm : +/- 0.30	Spreed
	+ Tolerance
Stop position	+ cm3/1000 strokes : 5.0
(P, R and H pump)	+ Check tolerance + cm3/1000S. : 9.0
Uact V : Value with	FUEL DELIVERY CHARACTERISTICS
deenergised adjusting magnet	+
and control rod in	+
stop position.	+ Rated speed rpm : 1000
CRT mm : 0.75 Tolerance mm : +/- 0.25	+ Uact V : 3.120 + Del. quantity
Check	- cm3/1000 strokes : 252.0
tolerance mm : +/- 0.35	+ Tolerance
	+ cm3/1000 s+rokes : +- 3.0
Stop position	+ Check tolerance
(M pump) Uact V : 0,720	+  cm3/1000s. : + 6.0
Tolerance Volt : +- 0,065	
CRT mm : 1,00	Rated speed rpm : 750
	+ Uact V : 1.470
Starting position	+

Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Check tolerance cm3/1000S.	: 83.0 : ← 5.0 : ← 9.0 : 12.0
Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	: 500 : 1.950 : 176.0 : + 4.0 : + 8.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance Volt	: 325 : 1.470 : +- 0.060 : +- 0.080
Del. quantity cm3/1000 strokes	: 40.0
Tolerance cm3/1000 strokes Spreed	: <b>←</b> 3.0
Tolerance cm3/1000 strokes Check tolerance	: 8.0
cm3/1000s.	: 12.0

# Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 20.12.96 : ISO 4113

Combination No. : 0 402 796 822

Injection pump

Pump designation : PES6P120A720/3LS7417

EP type number : 0 412 726 960

Governor

Governer design. : RE30

Governer no. : 0 421 890 039

Cust. part No. : 51.11103-7480

Customer-spec. information

Customer : MAN

Motor

: D 2866 LOH 25

Power KW : 228.0

# TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

Tolerance °C

: **←** 2.0

Overflow valve : 1 417 413 047

Inlet press. bar : 2.0

Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

208.5

Tolerance bar : +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

L02

x inside diameter: 3.0

x length mm :

## REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

# BEGINNING OF DELIVERY

26.0 Test pressure bar : Tolerance bar : + 1.0

Prestroke mm : 5.45
Tolerance mm : +- 0.05

Check tolerance mm : + 0.10

Rack travel in mm: 13.00

Tolerance mm : + 0.50

Firing order

: 6-2-4-1-5-

Phasing

: 0-60-120-180-240

: -300

Tolerance Check

: **←** 0.50

tolerance °NW

: **←** 0.75

Start of delivery blocking

Tolerance

: + 0.10

Check

tolerance °NW

: +- 0.75

Barrel no. : 6

(B) POSITIONER TESTING

Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

CRT mm 1,00 TESTING & SETTING RACK TRAVEL SENSOR POSITION Starting position (M pump) Uact V 4,500 Engine speed min-1: 0 Tolerance Volt : + 0,11519,00 CRT mm Setting point Tolerance mm : + 0,80 (P, R and H pump) Uact V 3.100 ENGINE-SPEED SENSOR CRT mm 13.00 Tolerance mm : +/- 0.05 (All P and R pumps not H and M pumps) Check tolerance mm : +/- 0.10 Test with control rod Check value in stop position (P, R and H pump) Engine speed min-1: 60 Amplitude V : 1.4 1.700 Tolerance V : +/- 0.6 Uact V CRT mm 6.15 Check : +/- 1.20 Tolerance mm : +/- 0.25 tolerance V Check tolerance mm : +/- 0.30 Engine speed min-1: Difference Amplitude to Amplitude V Setting point : max.1.4 (qmuq M) Uact V 3.100 CRT mm 12.50 (C) INJECTION PUMP WITH POSITIONER Tolerance mm : +/- 0.05TEST POINT V1 Check : +/- 0.10 tolerance mm Rated speed rpm 750 Uact V Check value 3.100 Del. quantity (qmuq M) cm3/1000 strokes : 271.0 Uact V 1.700 Tolerance 5.50 cm3/1000 strokes : +- 1.0CRT mm Tolerance mm : +/- 0.25 Check tolerance cm3/1000s. : +-4.0 Check : +/- 0.30 Spreed tolerance mm Tolerance Stop position cm3/1000 strokes : 5.0 Check tolerance (P, R and H pump) cm3/1000s.9.0 FUEL DELIVERY CHARACTERISTICS Uact V : Value with deenergised adjusting magnet and control rod in stop position. Rated speed rpm 1000 CRT mm 0.75Uact V 3.120 : +/- 0.25 Tolerance mm Del. quantity cm3/1000 strokes : 252.0 Check : +/- 0.35Tolerance tolerance mm cm3/1000 strokes : +-3.0 Check tolerance Stop position cm3/1000s. : +-6.0 (amuq M) 0,720 Uact V Tolerance Volt :  $\leftarrow 0.065$ 

Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s. Spreed Check tolerance cm3/1000s.	: 750 : 1.470 : 83.0 : ← 5.0 : ← 9.0 : 12.0
Rated speed rpm Uact V Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	: 500 : 1.950 : 176.0 : + 4.0 : + 8.0
Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 325 : 1.470 : + 0.060 : + 0.060 : 40.0 : + 3.0 : 8.0 : 12.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

**Fdition** Test oil : 20.12.96 : ISO 4113

Combination No. : 0 402 796 824

Injection pump

Pump designation : PES6P120A720LS7433

EP type number : 0 412 726 968

Governor

Governer design. : RE30

Governer no. : 0 421 890 042

Cust. part No. : 51.11103-7556

Customer-spec. information

Customer : MAN

Motor

: D 2866 LUH 20

Power KW

: 228.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

temp. °C Tolerance °C

: <del>+-</del> 2.0

Overflow valve : 1 417 413 047

Inlet press. bar :

2.0

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

: 208.5

Tolerance bar

: <del>←</del> 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

L05

x inside diameter: 3.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : + 1.0

Prestroke mm : 5.45
Tolerance mm : + 0.05

Check

tolerance mm

: +- 0.10

Rack travel in mm: 13.00 Tolerance mm : +- 0.50

Firing order : \_6- 2- 4- 1- 5-

Phasing

: 0-60-120-180-240

Tolerance

: -300 : **←** 0.50

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Start of delivery blocking

Tolerance : +- 0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 6

(B) POSITIONER TESTING

Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0 Setting point (P, R and H pump) : 3.100 : 13.00 3.100 Uact V CRT mm : +/- 0.05 Tolerance mm Check : +/- 0.10 tolerance mm Check value (P, R and H pump) Uact V 1.700 CRT mm 6.15 : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Setting point (dmuq M) : 3... 12.50 Uact V 3.100 CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (M pump) Uact V 1.700 CRT mm 5.50 Tolerance mm :  $\pm -0.25$ Check tolerance mm :  $\pm - 0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. CRT mm 0.75 : +/- 0.25 Tolerance mm Check : +/- 0.35 tolerance mm Stop position (M pump) 0,720 Uact V Tolerance Volt : +- 0,065

CRT mm : 1,00 Starting position (amuq M) Uact V 4,500 Tolerance Volt : +- 0,115 CRT mm : 19,00 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 750 Uact V 3.100 Del. quantity cm3/1000 strokes : 271.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +-Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. 9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm 1000 Uact V 3.120 Del. quantity cm3/1000 strokes : 252.0 Tolerance cm3/1000 strokes :  $\leftarrow$  3.0 Check tolerance cm3/1000s. : +-6.0

Rated speed rpm	: 750
Uact V	: 1.470
Del. quantity	
cm3/1000 strokes	: 83.0
Tolerance	. 65.6
cm3/1000 strokes	: +- 5.0
Check tolerance	
cm3/1000s.	: +- 9.0
Spreed	
Check tolerance	
cm3/1000s.	: 12.0
<del></del>	
Rated speed rpm	: 500
Uact V	: 1.950
Del. quantity	474.0
cm3/1000 strokes	: 176.0
Tolerance	
cm3/1000 strokes	: +- 4.0
Check tolerance cm3/1000s.	: +- 8.0
(11127 10003.	. 1 . 0.0
TEST POINT L1	
1201 102111 21	
Rated speed rpm	: 325
Uact V	: 1.470
Tolerance Volt	: +- 0.060
Check tolerance	
Volt	: <b>←</b> 0.060
Del. quantity	
cm3/1000 strokes	: 40.0
Tolerance	
cm3/1000 strokes	: ← 3.0
Spreed	
Tolerance	0.0
cm3/1000 strokes	: 8.0
Check tolerance	. 43.0
cm3/1000s.	: 12.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil : 14.01.97 : ISO 4113

Combination No. : 0 402 798 804

Injection pump

Pump designation : PES8P120A920/4LS7392

EP type number : 0 412 728 813

Governor

Governer design. : RE30

Governer no.

: 0 421 890 034

Cust. part No. : 313 GC 5209P2

Customer-spec. information Customer : MACK : EA9-600 Motor Power KW : 447.0

# TEST BENCH REQUIREMENTS

Inlet line : 4.2

Overflow valve : 2 417 413 086

Test oil inlet

temp. °C Tolerance °C

40 : +- 2.0

Inlet press. bar :

2.0

Tolerance bar

: +- 0.1

Test nozzle holde

assembly

: 1 688 901 103

Opening pressure

bar

208.5

Tolerance bar

: **←** 1.5

Test lines

: 1 680 750 008

Outside diameter : 6.0

L08

x inside diameter : 2.0 x Length mm : 600

REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : + 1.0

Prestroke mm 2.85 : + 0.05Tolerance mm

Check

: +- 0.10 tolerance mm

Rack travel in mm: 10.50 Tolerance mm : +- 0.20

: 1-2-7-8-4 Firing order : - 5- 6- 3

Phasing : 0-45-90-135-180 : -225-270-315

Tolerance : +- 0.50

Check

tolerance °NW : **←** 0.75

Start of delivery blocking

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION
Engine speed min-1: 0
Setting point (P, R and H pump)
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check
tolerance mm : +/- 0.10
Check value (P, R and H pump)
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check
tolerance mm : +/- 0.30
Setting point (M pump)
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05
Check tolerance mm : +/- 0.10
Check value (M pump)
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check
tolerance mm : +/- 0.30
Stop position (P, R and H pump)
Uact V: Value with deenergised adjusting magnet and control rod in stop position.
CRT mm : 0.75 Tolerance mm : +/- 0.25 Check
tolerance mm : +/- 0.35
Stop position (M pump) Uact V : 0,720 Tolerance Volt : + 0,065

CRT mm	: 1,00
Starting position (M pump) Uact V Tolerance Volt CRT mm Tolerance mm	: 4,500
ENGINE-SPEED SENSO (All P and R pumps H and M pumps)	
Test with control in stop position	rod
Engine speed min— Amplitude V Tolerance V Check tolerance V	1: 60 : 1.4 : +/- 0.6 : +/- 1.20
Engine speed min—' Difference Amplitude to Amplitude V	1: 600 : max.1.4
(C) INJECTION PUMP	P WITH POSITIONER
(C) INJECTION PUMP TEST POINT V1	P WITH POSITIONER
	: 900 : 2.950 : 303.0 : + 1.0 : + 4.0 : 7.0 : 11.0

Tolerance 12.0 cm3/1000 strokes : Check tolerance

cm3/1000s.16.0

# TEST POINT L1

Rated speed rpm 325 Uact V 1.340 Tolerance Volt : + 0.060

Check tolerance

: +- 0.070 Volt Del. quantity

cm3/1000 strokes : 27.0

Tolerance

cm3/1000 strokes : +-3.0

Spreed Tolerance

cm3/1000 strokes : 8.0

Check tolerance

12.0 cm3/1000s.

### STARTING FUEL DELIVERY

100 Rated speed rpm 4.700 Uact V Del. quantity cm3/1000 strokes : 185.0

Tolerance

cm3/1000 strokes :  $\leftarrow$  15.0

Check tolerance

cm3/1000s. : +- 20.0

Spreed Tolerance

cm3/1000 strokes : 40.0

Check tolerance

cm3/1000s. 45.0

#### Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 14.01.97 Test cil : ISO 4113

Combination No. : 0 402 896 310

Injection pump

Pump designation : PES6P130A320RS8522 EP type number : 0 412 936 201

Governor

Governer design. : RE30

Governer no. : 0 421 890 033

Cust. part No. : 309 4435

Customer—spec. information Customer : CUMMINS Motor : V30 Power KW : 1007.0

## TEST BENCH REQUIREMENTS

Inlet line : 3.2

Test oil inlet

temp. °C : 40 Tolerance °C : + 2.0

Overflow valve : 2 417 413 084

Inlet press. bar : 3.0 Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : + 1.0

Prestroke mm : 4.30
Tolerance mm : +- 0.05
Check

uneck

tolerance mm : + 0.10

Rack travel in mm : 12.00 Tolerance mm : +- 0.20

Firing order : 1-5-3-6-2-

: 4

Phasing : 0-60-120-180-240

: -300

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : + 0.75

Start of delivery blocking

°NW after s.o.d. : 25.00 Tolerance : ← 0.50 Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack : 10.00 travel Tolerance mm : **←** 1.50 Difference ° CS : 6.00 (B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) : 3.100 : 13.00 Uact V 3.100 CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Uact V 1.700 6.15 CRT mm Tolerance mm : +/- 0.25 Check : +/- 0.30 tolerance mm Setting point (amua M) : 3.1. · 12.50 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (dimud M) 1.700 Uact V 5.50 CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Stop position

deenergised adjusting magnet and control rod in stop position. CRT mm 0.75 Tolerance mm :  $\pm -0.25$ Check tolerance mm : +/- 0.35 Stop position (amua M) 0,720 Uact V Tolerance Volt : **←** 0,065 1,00 CRT mm Starting position (qmuq M) Uact V 4,500 Tolerance Volt : + 0,115 : 19,00 CRT mm Tolerance mm : +- 0.80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 900 Uact V 3.050 Del. quantity cm3/1000 strokes : 425.5 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +-5.0 Spreed Tolerance cm3/1000 strokes : 10.0 Check tolerance 14.0 cm3/1000s.FUEL DELIVERY CHARACTERISTICS

Uact V

(P, R and H pump)

: Value with

<del></del>	
Rated speed rpm	: 750 : 3.000
Uact V Del. quantity	: 3.000
cm3/1000 strokes	: 434.0
Tolerance	
cm3/1000 strokes	: +- 10.0
Check tolerance cm3/1000s.	: +- 12.0
Spreed	. +- 12.0
Tolerance	
cm3/1000 strokes	: 16.0
Check tolerance	
cm3/1000s.	: 18.0
TEST POINT L1	
Rated speed rpm	: 400
Uact V	: 1.280
Tolerance Volt	: +- 0.060
Check tolerance	
Volt	: +- 0.070
Del. quantity cm3/1000 strokes	: 49.0
Tolerance	. 49.0
cm3/1000 strokes	: +- 3.0
Spreed	
Tolerance	
cm3/1000 strokes	: 8.0
Check tolerance	. 4/ 0
cm3/1000s.	: 14.0
STARTING FUEL DEL	IVERY
Rated speed rpm	: 100
Uact V	: 4.700
Del. quantity	
cm3/1000 strokes	: 260.0
Tolerance	
cm3/1000 strokes Check tolerance	: +- 19.0
cm3/1000s.	: +- 22.0
Spreed	
Tolerance	
cm3/1000 strokes	: 40.0
Check tolerance	. 50.0
cm3/1000s.	: 50.0

End of test specification sheet

### Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 30.05.96 Test oil : ISO 4113

Combination No. : 0 402 698 806

Injection pump

Pump designation: PE8P120A720LS7331

: -10

EP type number : 0 412 628 896

Governor

Governer design. : RE30

Governer no. : 0 421 890 022

Cust. part No. : 1362097

Customer—spec. information Customer : SCANIA

Motor : DSC1409, DSC1416

#### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp.  $^{\circ}$ C : 40 Tolerance  $^{\circ}$ C : +- 2.0

Overflow valve : 1 417 413 025

Inlet press. bar : 2.5 Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 104

Opening pressure

bar : 251.5 Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter : 2.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 5.05Tolerance mm :  $\leftarrow 0.05$ 

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm : +- 1.50

Firing order : 1-2-7-3-4

: - 5- 6- 8

Phasing : 0-45-90-135-180 : -225-270-315

: + 0.50

Tolerance Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance :  $\leftarrow$  0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Vibration

damper

(RoBo diaphragm) : 3.2

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 3.100 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm Tolerance mm :  $\pm - 0.25$ Check tolerance mm :  $\pm -0.30$ Setting point (dmuq M) 3.100 : 3.100 : 12.50 Uact V Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (dmpq M) Uact V 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 CRT mm 5.50 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. : 0.75 CRT mm Tolerance mm : +/- 0.25

tolerance mm :  $\pm - 0.35$ Stop position (mpump) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm : 1,00 Starting position (qmuq M) Uact V 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00 Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60Amplitude V : 1.4Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 Uact V : 3.000 Del. quantity cm3/1000 strokes : 248.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +-4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 950 Uact V 3.000 Del. quantity cm3/1000 strokes : 224.0

Check

Tolerance cm3/1000 strokes	: +-	4.0
Check tolerance cm3/1000s.	: +-	6.0

# TEST POINT L1

Rated speed rpm	: 250
Uact V	: 1.410
Tolerance Volt	: <del>+-</del> 0.060
Check tolerance	
Volt	: +- 0.060
Del. quantity	
cm3/1000 strokes	: 16.0
Tolerance	
cm3/1000 strokes	: +- 3.0
Spreed	
Tolerance	
cm3/1000 strokes	: 4.0
Check tolerance	
cm3/1000s.	: 8.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 02.05.94 Test oil : ISO 4113

Combination No. : 0 402 795 201

Injection pump

Pump designation : PES5H120/720/3LS1002

EP type number : 0 412 725 201

Governor

Governer design. : RE33

Governer no. : 0 421 890 354

Cust. part No. :

Customer-spec. information Customer : MAN

Motor : D2865LF09

## TEST BENCH REQUIREMENTS

Inlet line : 4.1 EHAB

Test oil inlet

temp.  $^{\circ}$ C : 40 Tolerance  $^{\circ}$ C : +- 2.0

Overflow valve : 2 417 413 082

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0 x length mm : 600

## REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 31.0 Tolerance bar : +- 1.0

Prestroke mm : 9.99
Tolerance mm : + 0.05
Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50 Tolerance mm : +- 1.50

Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance :  $\leftarrow$  0.15

Check

tolerance °NW : +- 0.30

Start of delivery blocking

Tolerance : +- 0.10

Barrel no. : 5

(B) POSITIONER TESTING Warm—up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

**POSITION** 

Engine speed min-1:

Setting point (P, R and H pump)
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10
Check value (P, R and H pump)
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Setting point (M pump)
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10
Check value (M pump)
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Stop position (P, R and H pump)
Uact V: Value with deenergised adjusting magnet and control rod in stop position.
CRT mm : 0.75 Tolerance mm : +/- 0.25 Check
tolerance mm : +/- 0.35
Stop position (M pump) Uact V : 0,720 Tolerance Volt : +- 0,065 CRT mm : 1,00
Starting position (M pump) Uact V : 4,500

Tolerance Volt : + 0,115 CRT mm : 19,00 CRT mm : 19,00 Tolerance mm : + 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 750 Uact V 3.350 Prestroke solenoid Stroke mm 10.00 Del. quantity cm3/1000 strokes : 332.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000S. 9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm 1000 Uact V 3.290 Prestroke solenoid Stroke mm 8.00 Del. quantity cm3/1000 strokes : 309.0 Check tolerance cm3/1000s. : +- 6.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance

cm3/1000s.

12.0

Rated speed rpm Uact V Prestroke solenot Stroke mm Del. quantity cm3/1000 strokes Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 9.20 : 304.0 : ← 6.0 : 8.0 : 12.0
Rated speed rpm Uact V	: 500 : 2.100
Prestroke solenoi	id
Stroke mm Del. quantity	: 6.20
cm3/1000 strokes	: 168.0
Check tolerance cm3/1000s.	: <b>←</b> 6.0
Spreed	
Tolerance cm3/1000 strokes	: 8.0
Check tolerance cm3/1000s.	: 12.0
URIST TURUUS.	
31137 TOOG.	. 12.0
Rated speed rpm Uact V Prestroke solenoi Stroke mm Dei. quantity cm3/1000 strokes Check tolerance cm3/1000s.	: 750 : 1.450
Rated speed rpm Uact V Prestroke solenoi Stroke mm Dei. quantity cm3/1000 strokes Check tolerance	: 750 : 1.450 d : 10.00 : 65.0
Rated speed rpm Uact V Prestroke solenoi Stroke mm Dei. quantity cm3/1000 strokes Check tolerance cm3/1000S. TEST POINT L1 Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi	: 750 : 1.450 d : 10.00 : 65.0 : + 6.0 : 4.520 : + 0.060 d
Rated speed rpm Uact V Prestroke solenoi Stroke mm Dei. quantity cm3/1000 strokes Check tolerance cm3/1000S. TEST POINT L1 Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm	: 750 : 1.450 d : 10.00 : 65.0 : + 6.0 : 40.060 : + 0.060
Rated speed rpm Uact V Prestroke solenoi Stroke mm Dei. quantity cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes	: 750 : 1.450 d : 10.00 : 65.0 : + 6.0 : 4.520 : + 0.060 d
Rated speed rpm Uact V Prestroke solenoi Stroke mm Dei. quantity cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed	: 750 : 1.450 d : 10.00 : 65.0 : + 6.0 : + 6.0 : 1.520 : + 0.060 d : 7.20
Rated speed rpm Uact V Prestroke solenoi Stroke mm Dei. quantity cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes	: 750 : 1.450 d : 10.00 : 65.0 : + 6.0 : + 6.0 : 1.520 : + 0.060 d : 7.20 : 30.0
Rated speed rpm Uact V Prestroke solenoi Stroke mm Dei. quantity cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance	: 750 : 1.450 d : 10.00 : 65.0 : + 6.0 : + 6.0 : 1.520 : + 0.060 d : 7.20 : 30.0 : + 3.0

STARTING	FHE	DEL	TVFRY
SIMILING	IULL		TATIL

Rated speed rpm	:	100	
Uact V	:	2.450	
Prestroke solenoi	d		
Stroke mm	:	7.00	
Del. quantity cm3/1000 strokes Check tolerance	:	173.0	
cm3/1000s.	: +	- 12.0	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 18.12.96 : ISO 4113

Combination No. : 0 402 795 202

Injection pump

Pump designation : PES5H120/720/3LS1002

: -1

EP type number : 0 412 725 202

Governor

Governer design. : RE33

Governer no. : 0 421 890 362

Cust. part No. : 51.111103-7408

Customer-spec. information

Customer : MAN

Motor

: D 2865 LUH 07

Power KW

: 228.0

#### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

Test nozzle holde

assembly

: 1 688 901 105

Tolerance °C

2.0

Overflow valve : 2 417 413 073

Opening pressure

bar

208.5

Tolerance bar

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter :

3.0

x length mm : 600

REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 26.0

Tolerance bar : +- 1.0

Prestroke mm 9.99

Tolerance mm Check

tolerance mm : + - 0.10

Rack travel in mm : 10.50

Tolerance mm :  $\leftarrow$  0.50

Firing order : 1-3-5-4-2

: +- 0.05

Phasing : 0-72-144-216-288 Tolerance : +- 0.30

Check

tolerance °NW : +- 0.75

Start of delivery blocking

Tolerance : + - 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 5

(B) POSITIONER TESTING

Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-	1:	0	+	Uact V : 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00 Tolerance mm : + 0,80
•			+	Tolerance Volt : + 0,115
Setting point			+	CRT mm : 19,00
(P, R and H pump)			+	Tolerance mm : +- 0,80
•			1	•
Uact V CRT mm Tolerance mm	:	3.100	1	
CRT mm		13.00	1	ENGINE-SPEED SENSOR
Tolerance mm	· · +/-	0.05	1	(All P and R pumps not
Check	, ,		1	H and M pumps)
tolerance mm	: +/-	0.10	1	The state of the s
(0001-0100-11111	•	57.15	1	Test with control rod
Check value			1	in stop position
(P, R and H pump)			1	осор рестипа.
			1	Engine speed min-1: 60
			1	Amplitude V : 1.4
Hact V	:	1.700	1	Engine speed min-1: 60 Amplitude V: 1.4 Tolerance V: +/- 0.6
Uact V CRT mm	:	6.15	1	Check
Tolerance mm	: +/-	0.25	1	tolerance V : +/- 1.20
Check	• •	0.25	1	
tolerance mm	: +/-	0.30	1	Engine speed min-1: 600
COCOT ON TOC CIRC	•		1	Difference
			1	Amplitude to
Setting point			1	Amplitude V : max.1.4
(M pump)			1	Tanperedad v Tanani tri
(it banks			1	
Uact V		3 100	1	
CRT mm	•	3.100 12.50	1	(C) INJECTION PUMP WITH POSITIONER
Tolerance mm	· · +/-	0.05	1	to zhozotzan tom wzim toditionen
Check	• •	0.05	1	TEST POINT V1
tolerance mm	: +/-	0.10	1	
1000141100 11411		55	1	Rated speed rpm : 750
Check value			1	Rated speed rpm : 750 Uact V : 3.350
(M pump)			1	Prestroke solenoid
(ii bambs			1	Stroke mm : 10.00
Hact V	•	1.700	1	Del. quantity
Uact V CRT mm	:	5.50	1	cm3/1000 strokes : 332.0
Tolerance mm	: : : +/-	0.25	1	Tolerance
Check	, ,		1	cm3/1000 strokes : + 1.0
tolerance mm	: +/-	0.30	1	Check tolerance
20201 41.100 1	• •	5.55	1	cm3/1000s. : + 4.0
Stop position			+	Spreed
(P, R and H pump)			1	Tolerance
at A to make it hamiles			+	cm3/1000 strokes : 5.0
Uact V	: Valu	ue with	+	Check tolerance
	raised	adjusting magnet	+	cm3/1000s. : 9.0
		control rod in	1	FUEL DELIVERY CHARACTERISTICS
		position.	+	
CRT mm		0.75	+	
Tole ance mm	: +/-		+	Rated speed rpm : 1000
Check			+	Uact V : 3.290
tolerance mm	: +/-	0.35	+	Prestroke solenoid
-			+	Stroke mm : 8.00
			+	Del. quantity
Stop position			ì	
Stop position (M pump)			+	cm3/1000 strokes : 309.0
Stop position (M pump) Uact V	:	0,720	Į.	cm3/1000 strokes : 309.0 Tolerance
(M pump)		0,720 0,065	‡	
(M pump) Uact V			‡	Tolerance
(M pump) Uact V Tolerance Volt		0,065	‡ ‡	Tolerance cm3/1000 strokes : +- 4.0
(M pump) Uact V Tolerance Volt CRT mm		0,065	† † † †	Tolerance cm3/1000 strokes : +- 4.0 Check tolerance
(M pump) Uact V Tolerance Volt		0,065	† † † † †	Tolerance cm3/1000 strokes : +- 4.0 Check tolerance cm3/1000s. : +- 8.0

Tolerance			
cm3/1000 strokes Check tolerance	:		8.0
cm3/1000S.	:		12.0
Rated speed rpm	:		500
Uact V	:		2.900
Prestroke solenoid	ł		_
Stroke mm	:		9.20
Del. quantity cm3/1000 strokes	:		304.0
Tolerance			
cm3/1000 strokes Check tolerance	:	-	4.0
cm3/1000S.	:	+-	8.0
Spreed Tolerance			
cm3/1000 strokes	:		8.0
Check tolerance	•		
cm3/1000s.	:		12.0
	_		<del></del>
Rated speed rpm	:		500
Uact V Prestroke solenoid	:		2.100
Stroke mm	' :		6.20
Del. quantity			
cm3/1000 strokes Tolerance	:		168.0
cm3/1000 strokes	:	+-	4.0
Check tolerance			0.0
cm3/1000s. Spreed	:	+	8.0
Tolerance			
cm3/1000 strokes	:		8.0
Check tolerance cm3/1000s.			12.0
CIII37 10003.	•		12.0
<u> </u>			
Rated speed rpm Uact V	:		750 1.450
Prestroke solenoid	•		1.450
Stroke mm	:		10.00
Del. quantity cm3/1000 strokes	:		65.0
Tolerance	•		05.0
cm3/1000 strokes	:	+-	4.0
Check tolerance cm3/1000S.	•	+-	8.0
	•		0.0
TEST POINT L1			
Rated speed rpm	:		300
Uact V	:		1.520
Tolerance Volt Check tolerance	:	+-	0.060
Volt	:	+-	0.060
Prestroke solenoid			
Stroke mm	:		7.20

Del. quantity		
cm3/1000 strokes	:	30.0
Tolerance		
cm3/1000 strokes	: +-	3.0
Spreed		
Tolerance		
cm3/1000 strokes	:	8.0
Check tolerance		
cm3/1000s.	:	12.0

# STARTING FUEL DELIVERY

Rated speed rpm Uact V	: :	100 2.450	
Prestroke solenoid Stroke mm	:	7.00	
Del. quantity cm3/1000 strokes	:	173.0	
	: +-	10.0	
Check tolerance cm3/1000s.	: +-	12.0	

## Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 27.04.94 : ISO 4113

Combination No. : 0 402 796 201

Injection pump

Pump designation : PES6H120/720/3LS1001

EP type number : 0 412 726 201

Governor

Governer design. : RE33

Governer no. : 0 421 890 354

Cust. part No. :

Customer-spec. information

Customer : MAN

Motor

: D2866LF14

## TEST BENCH REQUIREMENTS

Inlet line : 4.1 EHAB

Test oil inlet

temp. °C

40

Tolerance °C

2.0

Overflow valve : 2 417 413 082

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

208.5

Tolerance bar

: <del>+-</del> 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter :

3.0

x length mm : 600

#### **REMARKS**

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

# BEGINNING OF DELIVERY

Test pressure bar : 31.0 Tolerance bar : + 1.0

Prestroke mm : 9.99 Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50

Tolerance mm : +- 1.50

Firing order

: 6-2-4-1-5-

: 3

Phasing

: 0-60-120-180-240

: -300

Tolerance

: +- 0.15

Check

tolerance °NW

: +- 0.30

Start of delivery blocking

Tolerance

: +- 0.10

Barrel no. : 6

(B) POSITIONER TESTING

Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

	(M. m. m.)
Engine speed min-1: 0	+ (M pump) - Hact V 4 500
Engine speed in the f.	+ Uact V : 4,500 + Tolerance Volt : + 0,115 + CRT mm : 19,00
Setting point	+ CRT mm : 19,00
(P, R and H pump)	+ CRT mm : 19,00 + Tolerance mm : +- 0,80
	+
Uact V : 3.100 CRT mm : 13.00	THOTHE OPER OFFICE
	+ ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05 Check	+ (All P and R pumps not + H and M pumps)
tolerance mm : +/- 0.10	
edect at localities	Test with control rod
Check value	in stop position
(P, R and H pump)	+
	+ Engine speed min-1: 60
4 700	Amplitude V : 1.4 Tolerance V : +/- 0.6
Uact V : 1.700 CRT mm : 6.15	
Tolerance mm : +/- 0.25	+ Check + tolerance V : +/- 1.20
Check	T toterance v . 17 1.20
tolerance mm : +/- 0.30	+ Engine speed min-1: 600
	+ Difference
	+ Amplitude to
Setting point	Amplitude V : max.1.4
(M pump)	†
Uact V : 3.100 CRT mm : 12.50	Ť
CRT mm : 12.50	(c) INJECTION PUMP WITH POSITIONER
Tolerance mm : +/- 0.05	+ CCS INDECTION OF WITH TOSTITOMEN
Check	+ TEST POINT V1
tolerance mm : +/- 0.10	+
	+ Rated speed rpm : 750
Check value	+ Uact V : 3.350
(M pump)	+ Prestroke solenoid + Stroke mm : 10.00
Uact V : 1.700	+ Del. quantity
Uact V : 1.700 CRT mm : 5.50	+ cm3/1000 strokes : 332.0
Tolerance mm : +/- 0.25	
	+ Tolerance
Check	+ Tolerance + cm3/1000 strokes : +- 1.0
Check tolerance mm : +/- 0.30	cm3/1000 strokes : +- 1.0 Check tolerance
tolerance mm : +/- 0.30	cm3/1000 strokes : +- 1.0 + Check tolerance + cm3/1000s. : +- 4.0
tolerance mm : +/- 0.30  Stop position	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed
tolerance mm : +/- 0.30	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance
tolerance mm : +/- 0.30  Stop position (P, R and H pump)	- cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance
tolerance mm : +/- 0.30  Stop position (P, R and H pump)	- cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000 Uact V : 3.290
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000 Uact V : 3.290 Prestroke solenoid
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000 Uact V : 3.290 Prestroke solenoid Stroke mm : 8.00
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000S. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000 Uact V : 3.290 Prestroke solenoid Stroke mm : 8.00 Del. quantity
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position (M pump) Uact V : 0,720	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000 Uact V : 3.290 Prestroke solenoid Stroke mm : 8.00 Del. quantity
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position (M pump)  Uact V : 0,720  Tolerance Volt : +- 0,065	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000 Uact V : 3.290 Prestroke solenoid Stroke mm : 8.00 Del. quantity cm3/1000 strokes : 309.0 Tolerance cm3/1000 strokes : +- 3.0
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position (M pump) Uact V : 0,720	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000 Uact V : 3.290 Prestroke solenoid Stroke mm : 8.00 Del. quantity cm3/1000 strokes : 309.0 Tolerance cm3/1000 strokes : +- 3.0 Check tolerance
tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35  Stop position (M pump)  Uact V : 0,720  Tolerance Volt : +- 0,065	cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1000 Uact V : 3.290 Prestroke solenoid Stroke mm : 8.00 Del. quantity cm3/1000 strokes : 309.0 Tolerance cm3/1000 strokes : +- 3.0

Rated speed rpm Uact V	500	
	: 500	
	: 2.90	0
Prestroke solenoi	l : 9.2	Ω
Stroke mm Del. quantity	. 9.2	U
cm3/1000 strokes	: 304.	0
Check tolerance		
cm3/1000s.	: <del>←</del> 6.	0
Rated speed rpm	: 500	
Uact V	: 2.10	0
Prestroke solenoi		_
Stroke mm Del. quantity	: 6.2	U
cm3/1000 strokes	: 168.	0
Check tolerance		_
cm3/1000s.	: +- 6.	0
Rated speed rpm	: 750	
Uact V	: 1.45	O
Prestroke solenoi		_
Stroke mm Del. quantity	: 10.0	J
cm3/1000 strokes	: 65.	0
Check tolerance		
cm3/1000s.	: +- 6.1	)
TEST POINT L1		
, 20 / / 02 / / 0 /		
Rated speed rpm	: 300	_
	4 53	1
Uact V	: 1.520 : +- 0.060	
Uact V Tolerance Volt	: 1.526 : + 0.066	
Uact V		)
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi	: + 0.060 : + 0.060	)
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm	: +- 0.060 : +- 0.060	)
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity	: + 0.060 : + 0.060 : 7.20	) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm	: + 0.060 : + 0.060	) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	: + 0.066 : + 0.066 : 7.26 : 30.6	) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed	: + 0.066 : + 0.066 : 7.26 : 30.6	) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance	: + 0.066 : + 0.066 : 7.26 : 30.6 : + 3.6	) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes	: + 0.066 : + 0.066 : 7.26 : 30.6	) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance	: + 0.060 : + 0.060 : 7.20 : 30.0 : + 3.0	) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	: + 0.066 : + 0.066 : 7.26 : 30.6 : + 3.6 : 8.6	) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance	: + 0.066 : + 0.066 : 7.26 : 30.6 : + 3.6 : 8.6 : 12.6	) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenois Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  STARTING FUEL DEL	: + 0.066 : + 0.066 : 7.26 : 30.6 : + 3.6 : 8.6 : 12.6	) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: + 0.066 : + 0.066 : 7.26 : 30.6 : + 3.6 : 8.6 : 12.6	) ) ) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  STARTING FUEL DEL. Rated speed rpm Uact V Prestroke solenoic	: + 0.066 : + 0.066 : 7.26 : 30.6 : + 3.6 : 12.6  VERY : 100 : 2.456	) ) ) )
Vact V Tolerance Volt Check tolerance Volt Prestroke solenois Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  STARTING FUEL DEL. Rated speed rpm Vact V Prestroke solenoid Stroke mm	: + 0.066 : + 0.066 : 7.26 : 30.6 : + 3.6 : 12.6 VERY : 100 : 2.456	) ) ) )
Uact V Tolerance Volt Check tolerance Volt Prestroke solenoi Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  STARTING FUEL DEL Rated speed rpm Uact V Prestroke solenoic	: + 0.066 : + 0.066 : 7.26 : 30.6 : + 3.6 : 12.6  VERY : 100 : 2.456	) ) ) )

Check tolerance cm3/1000S. : ← 12.0

Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 14.01.97 : ISO 4113

Combination No. : 0 402 996 309

Injection pump

Pump designation : PES6P130A720RS8521 EP type number : 0 412 936 200

Governor

Governer design. : RE30

Governer no. : 0 421 890 032

Cust. part No. : 309 4436

Customer-spec. information

Customer : CDC

Motor

: V30

Power KW

: 1007.0

TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 084

Inlet press. bar :

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

208.5

Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0

x length mm :

600

REMARKS

Pump-specific values in Section (B)

must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY.

Test pressure bar :

Tolerance bar : +- 1.0

Prestroke mm : 4.30

: **←** 0.05 Tolerance mm

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm: 12.00

Tolerance mm : +- 0.20

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

: -300

Tolerance : **←** 0.30

Check

tolerance °NW : +- 0.75

Start of delivery blocking

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack

: 10.00 travel

Tolerance mm : +- 1.50

L26

Difference ° CS : 6.00	+ CRT mm : 0.75 + Tolerance mm : +/- 0.25 + Check
	tolerance mm : +/- 0.35
(B) POSITIONER TESTING	T Stop position
Warm-up time: 3 minutes at	+ (M pump)
n=600 min-1, Uact = 2.5 V	+ Uact V : 0,720
	+ Tolerance Volt : + 0,065 + CRT mm : 1.00
	+ CRT mm : 1,00
TESTING & SETTING RACK TRAVEL SENSOR POSITION	+ + Starting position
LO31110/4	(M numn)
Engine speed min-1: 0	I Hact V · 4 500
tighte speed with 1.	Tolerance Volt : + 0 115
Setting point	(M pump) + Uact V : 4,500 + Tolerance Volt : + 0,115 + CRT mm : 19,00 - Tolerance mm : + 0.80
(P, R and H pump)	Tolerance mm : +- 0,80
לר, א פוים וו לימוולי	T roterance min 0,00
Uact V : 3.100	1
CRT mm : 13.00	+ ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05	+ (All P and R pumps not
Check	+ H and M pumps)
tolerance mm : +/- 0.10	+
	† Yest with control rod
Check value	in stop position
(P, R and H pump)	+
	+ Engine speed min-1: 60
	+ Amplitude V : 1.4 + Tolerance V : +/- 0.6
Uact V : 1.700 CRT mm : 6.15	
CRT mm : 6.15	+ Check
Tolerance mm : +/- 0.25	+ tolerance V : +/- 1.20
Check	† 5
tolerance mm : +/- 0.30	+ Engine speed min-1: 600
	+ Difference
0.44.	+ Amplitude to
Setting point (M pump)	+ Amplitude V : max.1.4
	+
Uact V : 3.100	+
CRT mm : 12.50	† (C) INJECTION PUMP WITH POSITIONER
Tolerance mm : +/- 0.05	+
Check	+ TEST POINT V1
tolerance mm : +/- 0.10	† Datadasadasa 000
object tura	Rated speed rpm : 900 Uact V : 3.050
Check value	
(M pump)	+ Del. quantity
11-at 1/	- cm3/1000 strokes : 425.5
Uact V : 1.700	Tolerance
CRT mm : 5.50	+ cm3/1000 strokes : +- 1.0
Tolerance mm : +/- 0.25	+ Check tolerance
Check	+ cm3/1000s. : + 5.0
tolerance mm : +/- 0.30	+ Spreed
Ston monition	Tolerance
Stop position	+ cm3/1000 strokes : 10.0
(P, R and H pump)	+ Check tolerance
Hoot V	+ cm3/1000S. : 14.0 + FUEL DELIVERY CHARACTERISTICS
Uact V : Value ith	T LOST DESTACK! CHARACLERIZITICS
deenergised adjusting magnet	Ť
and control rod in	Poted around now : 750
stop position.	+ Rated speed rpm : 750

Uact V	: 3.000
Del. quantity	. 0.000
cm3/1000 strokes	: 434.0
Tolerance	
cm3/1000 strokes	: +- 10.0
Check tolerance cm3/1000s.	: <del>+-</del> 12.0
Spreed	: += 12.0
Tolerance	
cm3/1000 strokes	: 16.0
Check tolerance	
cm3/1000s.	: 18.0
TECT DOTAIT 11	
TEST POINT L1	
Rated speed rpm	: 400
Uact V	: 1.280
Tolerance Volt	: +- 0.060
Check tolerance	0 070
Volt Del. quantity	: +- 0.070
cm3/1000 strokes	: 49.0
Tolerance	
cm3/1000 strokes	: +- 3.0
Spreed	
Tolerance	: 8.0
cm3/1000 strokes Check tolerance	. 8.0
cm3/1000s.	: 14.0
STARTING FUEL DEL	TVEDY
STARTING FUEL DEL	TVEKI
Rated speed rpm	: 100
Uact V	: 4.700
Del. quantity	242.0
cm3/1000 strokes	: 260.0
Tolerance cm3/1000 strokes	: +- 19.0
Check tolerance	. 1- 17.0
cm3/1000s.	: +- 22.0
Spreed	
Tolerance	45.0
cm3/1000 strokes	: 40.0
Check tolerance cm3/1000s.	: 50.0
	. 50.0

End of test specification sheet

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil : 22.01.97 : ISO 4113

Combination No. : 0 402 698 033F1

Injection pump

Pump designation : PE8H120/320LS3-2

EP type number

Governor

Governer design. : RE36 (FD 57102 - FD

: 57108)

Governer no.

Cust. part No. : 0250745602

Customer-spec. information Customer : MB-NFZ

Motor

: OM 442 LA

# TEST BENCH REQUIREMENTS

Inlet line : 3.2 ELAB

Test oil inlet

temp. °C

Tolerance °C

: +- 2.0

40

Overflow valve : 2 417 413 082

Inlet press. bar : 3.5

Tolerance bar  $: \leftarrow 0.1$ 

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

208.5

Tolerance bar

: +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

3.0 x inside diameter : x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : ← 1.0

Prestroke mm 7.00 : +- 0.05 Tolerance mm

Check

: +- 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm : +- 0.50

Firing order : 8-7-2-6-3

: - 5- 4- 1

: 0-45-90-135-180 Phasing

: -225-270-315

: +- 0.50 Tolerance

Check

tolerance °NW : + 0.75

Start of delivery mark

Tolerance : +- 0.50

Check

tolerance \*N₩ : +- 0.75

Barrel no. : 8

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION
Engine speed min-1: 0
Setting point (P, R and H pump)
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check
tolerance mm : +/- 0.10
Check value (P, R and H pump)
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25
Check tolerance mm : +/- 0.39
Setting point (M pump)
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check
tolerance mm : +/- 0.10
Check value (M pump)
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25
Check tolerance mm : +/- 0.30
Stop position (P, R and H pump)
Uact V : Value with deenergised adjusting magnet and control rod in
stop position. CRT mm : 0.75
Tolerance mm : +/- 0.25 Check
tolerance mm : +/- 0.35
Stop position (M pump) Uact V : 0,720

Tolerance Volt CRT mm	: +- 0,065 : 1,00
Starting position (M pump) Uact V Tolerance Volt CRT mm Tolerance mm	: 4,500 : ← 0,115 : 19,00 : ← 0,80
ENGINE-SPEED SENSO (All P and R pumps H and M pumps)	
Test with control in stop position	rod
Engine speed min-1 Amplitude V Tolerance V Check tolerance V	1: 60 : 1.4 : +/- 0.6 : +/- 1.20
Engine speed min-1 Difference Amplitude to Amplitude V	: 600 : max.1.4
(C) INJECTION PUMP	WITH POSITIONER
(C) INJECTION PUMP TEST POINT V1	WITH POSITIONER
TEST POINT V1  Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	: 750 : 2.800 : 7.40 : 347.0
TEST POINT V1  Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	: 750 : 2.800 : 7.40 : 347.0 : + 1.0 : + 4.0 : 5.0 : 9.0

Tolerance cm3/1000 strokes Check tolerance	: +- 4.0
cm3/1000s.	: ← 8.0
Rated speed rpm Wact V	: 550 : 2.700
Prestroke solenoi Stroke mm	
Del. quantity	
cm3/1000 strokes Tolerance	: 354.0
cm3/1000 strokes Check tolerance	: +- 4.0
cm3/1000s.	: <del></del>
TEST POINT L1	
Rated speed rpm Uact V	: 300 : 1.500
Tolerance Volt	: + 0.060
Check tolerance Volt	: + 0.060
Prestroke solenoi Stroke mm	d : 8.00
Del. quantity cm3/1000 strokes	: 37.0
Tolerance cm3/1000 strokes	
Spreed	3.0
Tolerance cm3/1000 strokes	: 6.0
Check tolerance cm3/1000S.	: 9.0
STARTING FUEL DEL	TVEDY
Rated speed rpm Uact V	: 100 : 1.900
Prestroke solenoi Stroke mm	d : 10.00
Del. quantity cm3/1000 strokes	: 114.0
Tolerance	
cm3/1000 strokes Check tolerance	: +- 10.0
cm3/1000s.	: +- 20.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 22.01.97 Edition Test oil : ISO 4113

Combination No. : 0 402 698 033F2

Injection pump

Pump designation : PE8H12O/32OLS3-2

EP type number

Governor

Governer design. : RE36 (FD 57109 - FD

: 66213)

Governer no.

Cust. part No. : 0250745602

Customer-spec. information : MB-NFZ Customer Motor : OM 442 LA

## TEST BENCH REQUIREMENTS

Inlet line : 3.2 ELAB

Test oil inlet

40 temp. °C Tolerance °C : +- 2.0

Overflow valve : 2 417 413 082

3.5 Inlet press. bar : Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

bar 208.5 Tolerance bar : +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x tength mm :

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : +-7.00 : +- 0.05 Check tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 8-7-2-6-3

: - 5- 4- 1

Phasing : 0-45-90-135-180

: -225-270-315 : +- 0.50

: +- 0.75

Check

Tolerance

: +- 0.75 tolerance °NW

Start of delivery mark

Tolarance : +- 0.50 Check

tolerance °NW

Barrel no. 8

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

MO4

TESTING & SETTING RACK TRAVEL SENSOR POSITION
Engine speed min-1: 0
Setting point (P, R and H pump)
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10
Check value (P, R and H pump)
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Setting point (M pump)
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10
Check value (M pump)
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check
tolerance mm : +/- 0.30
Stop position (P, R and H pump)
Uact V: Value with deenergised adjusting magnet and control rod in
stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check tolerance mm : +/- 0.35
Stop position (M pump) Uact V : 0,720

Tolerance Volt : +- 0,065	
CRT mm : 1,00	
Starting position	
(M pump)	
Uact V : 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00	
CRT mm : 19,00	
Tolerance mm : +- 0,80	
TOTAL MAIN	
ENGINE-SPEED SENSOR	
(All P and R pumps not	
H and M pumps)	
Test with control rod	
in stop position	
Fraince aread win 1. 40	
Engine speed min-1: 60 Amplitude V : 1.4	
Amplitude V : 1.4 Tolerance V : +/- 0.6	
Check	
tolerance V : +/- 1.20	
, i.es	
Engine speed min-1: 600	
Difference	
Amplitude to	
Amplitude V : max.1.4	
	_
(C) INJECTION PUMP WITH POSITIONER	_
	_
(C) INJECTION PUMP WITH POSITIONER TEST POINT V1	_
TEST POINT V1	
TEST POINT V1 Rated speed rpm : 750	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800	
TEST POINT V1 Rated speed rpm : 750	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance	
TEST POINT V1  Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0	
Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS	
Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS	
Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS	
Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950 Uact V : 2.900	
Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950 Uact V : 2.900 Prestroke solenoid Stroke mm : 8.00 Del. quantity	
Rated speed rpm : 750 Uact V : 2.800 Prestroke solenoid Stroke mm : 7.40 Del. quantity cm3/1000 strokes : 350.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 950 Uact V : 2.900 Prestroke solenoid Stroke mm : 8.00	

Check tolerance	: +- 4.0
cm3/1000S.	: +- 8.0
Rated speed rpm Uact V	: 550 : 2.700
Prestroke solenoi Stroke mm	d : 9.50
Del. quantity	
cm3/1000 strokes Tolerance	: 357.0
cm3/1000 strokes	: +- 4.0
Check tolerance cm3/1000S.	: +- 8.0
TEST POINT L1	
Rated speed rpm	: 300
Uact V Tolerance Volt	: 1.500 : +- 0.060
Check tolerance	
Volt Prestroke solenoi:	: +- 0.060 d
Stroke mm	: 8.00
Del. quantity cm3/1000 strokes	: 40.0
Tolerance cm3/1000 strokes	: +- 3.0
Spreed	3.0
Tolerance cm3/1000 strokes	: 6.0
Check tolerance	
cm3/1000s.	: 9.0
STARTING FUEL DEL	IVERY
Rated speed rpm	: 100
Jact V Prestroke solenoid	: 1.900
Stroke mm	: 10.00
Del. quantity cm3/1000 strokes	: 117.0
Tolerance	
cm3/1000 strokes Check tolerance	: +- 10.0
	: +- 20.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil : ISO 4113

: 22.01.97

Combination No. : 0 402 698 033F3

Injection pump

Pump designation : PE8H120/320LS3-2

EP type number

Governor

Governer design. : RE36 (FD 66214 - FD

: 66231)

Governer no.

Cust. part No. : 0250745602

Customer-spec. information Customer : MB-NFZ : OM 442 LA Motor

### TEST BENCH REQUIREMENTS

Inlet line : 3.2 ELAB

Test oil inlet

temp. °C

: +- 2.0 Tolerance °C

Overflow valve : 2 417 413 082

Inlet press. bar :

Tolerance bar  $: \leftarrow 0.1$ 

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

208.5

Tolerance bar : + 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

M07

x inside diameter: 3.0

x Length mm :

600

## **REMARKS**

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : ← 1.0

Prestroke mm : 7.00 Tolerance mm : +- 0.05

Check

tolerance mm : + 0.10

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 8-7-2-6-3

: - 5- 4- 1

Phasing : 0-45-90-135-180

: -225-270-315 : +- C.5C

Tolerance Check

tolerance °NW : <del>+-</del> 0.75

Start of delivery mark

Tolerance : +- 0.50

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Barrel no. : 8

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING POSITION	RACK	TRIVEL	SENSOR
Engine speed min-	1:	0	
Setting point (P, R and H pump)			
Uact V CRT mm Tolerance mm	: : : +/-	3.100 13.00 - 0.05	
Check tolerance mm	: +/-	- 0.10	
Check value (P, R and H pump)			
Uact V	:	1.700	
CRT mm Tolerance mm	: : +/-	6.15 - 0.25	
Check tolerance mm	: +/-	- 0.30	
Setting point (M pump)			
Uact V CRT mm	:	3.100 12.50	
Tolerance mm	: +/-	- 0.05	
tolerance mm	: +/-	- 0.10	
Check value (M pump)			
Uact V CRT mm	:	1.700 5.50	
Tolerance mm Check		5.50 0.25	
tolerance mm	: +/-	- 0.30	
Stop position (P, R and H pump)			
Uact V deener	gisec and	contro	ing magnet ol rod in
CRT mm	:	p posit 0.75 0.25	TON.
Tolerance mm Check tolerance mm		0.35	
Stop position			
(M pump) Uact V	:	0,720	

Tolerance Volt CRT mm	: +- 0,065 : 1,00
Starting position (M pump)	. / 500
Uact V Tolerance Volt	: 4,500 : ← 0,115
CRT mm	: + 0,115 : 19,00
Tolerance mm	: +- 0,80
ENGINE-SPEED SENSO (All P and R pumps H and M pumps)	
Test with control in stop position	rod
Engine speed min-1	
Amplitude V Tolerance V	: 1.4 : +/- 0.6
Check	
tolerance V	: +/- 1.20
Engine speed min-1 Difference	: 600
Amplitude to Amplitude V	: max.1.4
(0) 71115077011 5180	
(C) INJECTION PUMP	WITH POSITIONER
(C) INJECTION PUMP TEST POINT V1	WITH POSITIONER
TEST POINT V1	: 750
TEST POINT V1 Rated speed rpm Uact V	: 750 : 2.800
TEST POINT V1	: 750 : 2.800
TEST POINT V1 Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity	: 750 : 2.800 : 7.40
TEST POINT V1 Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes	: 750 : 2.800 : 7.40
TEST POINT V1 Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	: 750 : 2.800 : 7.40
TEST POINT V1 Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	: 750 : 2.800 : 7.40 : 344.0 : +- 1.0
TEST POINT V1 Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	: 750 : 2.800 : 7.40 : 344.0
TEST POINT V1  Rated speed rpm  Uact V  Prestroke solenoid  Stroke mm  Del. quantity  cm3/1000 strokes  Tolerance  cm3/1000 strokes  Check tolerance  cm3/1000s.  Spreed  Tolerance	750 2.800 7.40 344.0 +- 1.0
TEST POINT V1 Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance cm3/1000 strokes	750 2.800 7.40 344.0 +- 1.0
TEST POINT V1  Rated speed rpm Uact V  Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	750 2.800 7.40 344.0 +- 1.0 +- 4.0
TEST POINT V1  Rated speed rpm Uact V  Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	750 2.800 7.40 344.0 +- 1.0 +- 4.0
TEST POINT V1  Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000s. Spreed Tolerance cm3/1000s. Check tolerance cm3/1000s. Check tolerance cm3/1000s. FUEL DELIVERY CHARA	750 2.800 7.40 344.0 +- 1.0 +- 4.0
TEST POINT V1  Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000s. Spreed Tolerance cm3/1000s. FUEL DELIVERY CHAR/ Rated speed rpm Uact V	750 2.800 7.40 344.0 +- 1.0 +- 4.0 5.0 9.0 ACTERISTICS
TEST POINT V1  Rated speed rpm Uact V Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000s. Spreed Tolerance cm3/1000s. Spreed Tolerance cm3/1000s. FUEL DELIVERY CHAR/ Rated speed rpm Uact V Prestroke solenoid	750 2.800 7.40 344.0 +- 1.0 +- 4.0 5.0 9.0 ACTERISTICS
TEST POINT V1  Rated speed rpm Uact V  Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	750 2.800 7.40 344.0 +- 1.0 +- 4.0 5.0 9.0 ACTERISTICS 950 2.900 8.00

M08

Tolerance	
cm3/1000 strokes	: +- 4.0
Check tolerance	
cm3/1000S.	: <del></del>
Rated speed rpm	: 550
Uact V	: 2.700
Prestroke solenoid	d
Stroke mm	: 9.50
Del. quantity	
cm3/1000 strokes	: 351.0
Tolerance	
cm3/1000 strokes	: +- 4.0
Check tolerance	
cm3/1000S.	: <del>←</del> 8.0
TEST POINT L1	
ICOT TOTAL CI	
Rated speed rpm	: 300
Uact V	: 1.500
Tolerance Volt	: <b>←</b> 0.060
Check tolerance	
Volt	: <b>←</b> 0.060
Prestroke solenoid	<del></del>
Stroke mm	: 8.00
Del. quantity	7/ 0
cm3/1000 strokes	: 34.0
Tolerance	: +- 3.0
cm3/1000 strokes Spreed	3.0
Tolerance	
cm3/1000 strokes	: 6.0
Check tolerance	. 0.0
cm3/1000s.	: 9.0
	-
STARTING FUEL DELI	TVEDY
STARTING FOLL DELL	L V LIVE
Rated speed rpm	: 100
Uact V	: 1.900
Prestroke solenoid	
Stroke mm	: 10.00
Del. quantity	444.5
cm3/1000 strokes	: 111.0
Tolerance	40.0
cm3/1000 strokes	: +- 10.0
Check tolerance cm3/1000s.	: +- 20.0
CIII.27 (10003).	, 20.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 17.01.97 : ISO 4113

Combination No. : 0 402 698 804

Injection pump

Pump designation : PE8P120A720LS7205

: -10

EP type number : 0 412 628 895

Governor

Governer design. : RE30

Governer no. : 0 421 890 007

Cust. part No. : 1328039

Customer-spec. information

Customer : SCANIA

: DSC1409, DSC1416 Motor

### TEST BENCH REQUIREMENTS

Inlet line : 4.1

Test oil inlet

temp. °C

40

Tolerance °C

: **←** 2.0

Overflow valve : 1 417 413 025

Inlet press. bar :

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 104

Opening pressure

251.5

Tolerance bar

: +- 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

M10

x inside diameter : 2.0

x length mm :

600

## REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm 5.05 : +- 0.05 Tolerance mm

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 : + 1.50 Tolerance mm

: 1-2-7-3-4 Firing order

: - 5- 6- 8

: 0-45-90-135-180 Phasing

: -225-270-315 Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance : +- 0.10

Check

tolerance °NW : +- 0.75

: 1 Barrel no.

Vibration

damper

(RoBo diaphragm) : 3.2

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) : 3.100 : 13.00 Uact V 3.100 CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30 Setting point (dmpq M) : 3.100 : 12.50 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (amua M) 1.700 Uact V CRT mm 5.50 Tolerance mm : +/-0.25Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm Tolerance mm : +/- 0.25

tolerance mm :  $\pm -0.35$ Stop position (amua M) Uact V : 0,720 Tolerance Volt : +- 0,065 1,00 CRT mm Starting position (M pump) Uact V 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00 Tolerance mm : + 0.80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V: 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 700 Uact V 3.000 Del. quantity cm3/1000 strokes : 248.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +-4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 950 Uact V Del. quantity 3.000 cm3/1000 strokes : 224.0

Check

Tolerance cm3/1000 strokes	: +-	4.0
Check tolerance		
cm3/1000s.	: +-	6.0

# TEST POINT L1

Rated speed rpm	:		250
Uact V	:		1.410
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Del. quantity			
cm3/1000 strokes	:		16.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		4.0
Check tolerance			
cm3/1000s.	:		8.0

## Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 04.10.96 : ISO 4113

Combination No. : 0 402 696 033

Injection pump

Pump designation : PE6H12O/32OLS4-2 EP type number : 0 412 626 003

Governor

Governer design. : RE36

Governer no. : 0 421 890 359

Cust. part No. : 0250745502

Customer-spec. information Customer : MB-NFZ Motor : OM 441 LA

# TEST BENCH REQUIREMENTS

Inlet line : 3.2 ELAB

Test oil inlet

40 temp. °C Tolerance °C : +- 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 3.0Tolerance bar :  $\leftarrow$  0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

: 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm :

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

# BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar :  $\leftarrow$  1.0

Prestroke mm 7.00 : +- 0.05 Tolerance mm

Check

tolerance mm : **←** 0.10

Rack travel in mm: 10.50 Tolerance mm : ← 0.50

Firing order : 6-3-5-2-4-

: 0-60-120-180-240 Phasing

: -300

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

Tolerance :  $\leftarrow$  0.50

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Barrel no. : 6

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR **POSITION** Engine speed min-1: n Setting point (P, R and H pump) Uact V CRT mm : 3.100 : 13.00 3.100 Tolerance mm : +/- 0.05 Check : +/- 0.10 tolerance mm Check value (P, R and H pump) 1.700 Uact V CRT mm 6.15 : +/~ 0.25 Tolerance mm Check tolerance mm : +/- 0.30 Setting point (M pump) : Uact V 3.100 CRT mm 12.50 Tolerance mm : +/- 0.05 Check : +/- 0.10 tolerance mm Check value (M pump) 1.700 Uact V 5.50 CRT mm Tolerance mm : +/- 0.25 Check : +/= 0.30 tolerance mm Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. CRT mm 0.75 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.35$ Stop position (M pump) 0,720 Uact V Tolerance Volt : +- 0,065

CRT mm : 1,00 Starting position (amua M) Uact V 4,500 : +- 0,115 Tolerance Volt : CRT mm 19,00 Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 750 3.000 Uact V Prestroke solenoid 7.00 Stroke mm Del. quantity cm3/1000 strokes : 375.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +-4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. 9.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm 1050 Uact V 3.000 Prestroke solenoid 7.00 Stroke mm Del. quantity cm3/1000 strokes : 339.0 Tolerance cm3/1000 strokes : +- 3.0

Check tolerance cm3/1000S. : +- 6.0	
Rated speed rpm : 550 Uact V : 2.800	
Prestroke solenoid	
Stroke mm : 8.70	
Del. quantity cm3/1000 strokes : 367.0	
Tolerance cm3/1000 strokes : + 3.0	
Check tolerance $cm3/1000S$ . : $\leftarrow$ 6.0	
TEST POINT L1	
Rated speed rpm : 300	
Uact V : 1.500	
Tolerance Volt : + 0.060	
Check tolerance	
Volt : + 0.060	
Prestroke solenoid	
Stroke mm : 8.00	
Del. quantity	
cm3/1000 strokes : 25.0 Tolerance	
cm3/1000 strokes : +- 3.0	
Spreed	
Tolerance cm3/1000 strokes : 6.0	
Check tolerance	
cm3/1000S. : 9.0	
STARTING FUEL DELIVERY	
Rated speed rpm : 100	
Uact V : 1.900	
Prestroke solenoid	
Stroke mm : 10.00	
· · · ·	
Del. quantity	
· · · ·	

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 04.10.96 Edition Test oil : ISO 4113

Combination No. : 0 402 796 033

Injection pump

Pump designation : PES6H120/720LS7 EP type number : 0 412 726 004

Governor

Governer design. : RE36

Governer no. : 0 421 890 360

Cust. part No. : 0250745702

Customer-spec. information Customer : MB-NFZ Motor : OM 447 LA

## TEST BENCH REQUIREMENTS

Inlet line : 3.2 EHAB

Test oil inlet

temp. °C 40 Tolerance °C 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 3.0 Tolerance bar : +- 0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

: 208.5 bar Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

## REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

#### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

Prestroke mm : 7.00 Tolerance mm : +- 0.05 Check : **←** 0.10 tolerance mm

Rack travel in mm : 10.50 Tolerance mm : +- 0.50

Firing order : 6-2-4-1-5-

: 0-60-120-180-240 Phasing

: -300

: +- 0.50 Tolerance

Check

tolerance °NW : + - 0.75

Start of delivery mark

Tolerance : **←** 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 6

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

	+ CRT mm : 1,00
TESTING & SETTING RACK TRAVEL SENSOR POSITION	+ Starting position + (M pump)
Engine speed min-1: 0	Uact V : 4,500  Tolerance Volt : + 0,115  CRT mm : 19,00
Catting maint	†
Setting point (P, R and H pump)	Tolerance mm : +- 0,80
Hact V · 3 100	1
Uact V : 3.100 CRT mm : 13.00	+ ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05	+ (All P and R pumps not
Check	H and M pumps)
tolerance mm : +/- 0.10	Test with control rod
Check value	in stop position
(P, R and H pump)	+
	Engine speed min-1: 60
Uact V : 1.700	+ Amplitude V : 1.4 + Tolerance V : +/- 0.6
CRT mm : 6.15	+ Check
Tolerance mm : +/- 0.25	+ tolerance V : +/- 1.20
Check	Fasing association (60)
tolerance mm : +/- 0.30	+ Engine speed min-1: 600 + Difference
	Amplitude to
Setting point	Amplitude V : max.1.4
(M pump)	†
Hart V · 3 100	I
CRT mm : 12.50	(C) INJECTION PUMP WITH POSITIONER
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05	+
Check tolerance mm : +/- 0.10	TEST POINT V1
: 17 - 5.10	Rated speed rpm : 800
Check value	+ Uact V : 2.650
(M pump)	+ Prestroke solenoid
Uact V : 1.700	+ Stroke mm : 9.00 + Del. quantity
CRT mm : 5.50	+ cm3/1000 strokes : 302.0
Tolerance mm : +/- 0.25	+ Tolerance
Check	+ cm3/1000 strokes : + 1.0
tolerance mm : +/- 0.30	+ Check tolerance + cm3/1000s. : +- 4.0
Stop position	+ cm3/1000s. : +- 4.0 + Spreed
	+ cm3/1000s. : +- 4.0 + Spreed + Tolerance
Stop position (P, R and H pump)	- cm3/1000s. : +- 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0
Stop position (P, R and H pump)  Uact V : Value with	- cm3/1000s. : +- 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance
Stop position (P, R and H pump)	- cm3/1000s. : +- 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0
Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.	- cm3/1000s. : +- 4.0 - Spreed - Tolerance - cm3/1000 strokes : 5.0 - Check tolerance - cm3/1000s. : 9.0
Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75	cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS
Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25	cm3/1000s. : +- 4.0  Spreed  Tolerance cm3/1000 strokes : 5.0  Check tolerance cm3/1000s. : 9.0  FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1100
Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75	cm3/1000s. : +- 4.0  Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1100 Uact V : 2.750 Prestroke solenoid
Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35	cm3/1000s. : +- 4.0  Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1100 Uact V : 2.750 Prestroke solenoid Stroke mm : 6.00
Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35  Stop position	cm3/1000s. : +- 4.0  Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1100 Uact V : 2.750 Prestroke solenoid Stroke mm : 6.00 Del. quantity
Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35	cm3/1000s. : +- 4.0  Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1100 Uact V : 2.750 Prestroke solenoid Stroke mm : 6.00
Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35  Stop position (M pump)	cm3/1000s. : +- 4.0  Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1100 Uact V : 2.750 Prestroke solenoid Stroke mm : 6.00 Del. quantity cm3/1000 strokes : 302.0

M17

Check tolerance cm3/1000s.	: +- 8.0
Rated speed rpm Uact V	: 550 : 2.350
Prestroke solenoi	
Stroke mm	: 9.00
Del. quantity cm3/1000 strokes Tolerance	: 272.0
cm3/1000 strokes	: +- 8.0
Check tolerance	
cm3/1000s.	: + 11.0
TEST POINT L1	
Rated speed rpm	: 300
Uact V	: 1.440
Tolerance Volt	: +- 0.060
Check tolerance	
Volt	; ← 0.060
Prestroke solenoic Stroke mm	: 9.00
Del. quantity	: 9.00
cm3/1000 strokes	: 25.0
Tolerance	
cm3/1000 strokes Spreed	: +- 3.0
Tolerance	4.0
cm3/1000 strokes Check tolerance	: 6.0
cm3/1000s.	: 9.0
STARTING FUEL DELI	[VERY
Rated speed rpm	: 100
Uact V	: 1.900
Prestroke solenoid	
Stroke mm	: 9.00
Del. quantity	. 40/ 0
cm3/1000 strokes Tolerance	: 104.0
cm3/1000 strokes	: <del>+</del> 10.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 16.12.96 Test oil : ISO 4113

Combination No. : 0 402 796 204

Injection pump

Pump designation : PES6H120/720/3LS1005

: -1

EP type number : 0 412 726 204

Governor

Governer design. : RE33

Governer no. : 0 421 890 364

Cust. part No. : 51.11103-7539

Customer-spec. information

Customer : MAN

Motor : D 2866 LF 16

Power KW : 294.0

## TEST BENCH REQUIREMENTS

Inlet line : 4-unten

Test oil inlet

temp. °C : 40Tolerance °C : +- 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : 3.0
Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

#### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 10.00 Tolerance mm : + 0.05

Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm : +- 0.50

Firing order : 6-2-4-1-5-

: 3

Phasing : 0-60-120-180-240

: -300

Tolerance :  $\leftarrow$  0.50

Check

tolerance °NW : +- 0.75

## Start of delivery blocking

Tolerance :  $\leftarrow$  0.10

Check

tolerance "NW :  $\leftarrow$  0.75

Barrel no. : 6

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION Starting position (amua M) Uact V : 4,500 Engine speed min-1: Tolerance Volt : + 0,115 : 19,00 Setting point CRT mm Tolerance mm (P, R and H pump) : +- 0,80 3.100 Uact V CRT mm 13.00 ENGINE-SPEED SENSOR (All P and R pumps not Tolerance mm : +/- 0.05 H and M pumps) Check : +/- 0.10 tolerance mm Test with control rod Check value in stop position (P, R and H pump) Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 : 1.700 : 6.15 Uact V CRT mm Check : +/- 0.25 Tolerance mm tolerance V : +/- 1.20 Check tolerance mm : +/- 0.30 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 Setting point (M pump) : Uact V 3.100 CRT mm 12.50 (C) INJECTION PUMP WITH POSITIONER Tolerance mm : +/- 0.05 Check TEST POINT V1 tolerance mm :  $\pm$  +/- 0.10 750 Rated speed rpm : Check value Uact V 3.350 (amua M) Prestroke solenoid Stroke mm 10.00 : 1.700 : 5.50 Uact V Del. quantity CRT mm cm3/1000 strokes : 328.0 Tolerance mm : +/- 0.25 Tolerance Check cm3/1000 strokes : +- 1.0 tolerance mm : +/- 0.30 Check tolerance cm3/1000S. : +- 4.0 Stop position Spreed (P, R and H pump) Tolerance cm3/1000 strokes : 5.0 Uact V : Value with Check tolerance deenergised adjusting magnet cm3/1000s. 9.0 and control rod in FUEL DELIVERY CHARACTERISTICS stop position. CRT mm 0.75 : +/- 0.25 750 Tolerance mm Rated speed rpm : Check Uact V 1.450 tolerance mm : +/- 0.35 Prestroke solenoid 10.00 Stroke mm Stop position Del. quantity (m pump) cin3/1000 strokes : 72.0 Uact V 0,720 Tolerance Tolerance Volt : + 0,065 cm3/1000 strokes : + 4.0

CRT mm : 1,00

M20

cm3/1000s. Spreed	:	+-	8.0
Tolerance cm3/1000 strokes	:		4.0
Check tolerance cm3/1000s.	:		8.0
Rated speed rpm Uact V Prestroke solenoid	:		1000 3.290
Stroke mm	:		8.00
Del. quantity cm3/1000 strokes	:		310.0
Tolerance cm3/1000 strokes	:	+-	4.0
Check tolerance cm3/1000S.	:	+-	8.0
Rated speed rpm Uact V	:		500 2.900
Prestroke solenoid Stroke mm	:		9.20
Del. quantity cm3/1000 strokes	:		303.0
Tolerance cm3/1000 strokes	:	+	5.0
Check tolerance cm3/1000S.	:	+	9.0
Rated speed rpm	 :	<del></del>	500
Uact V	:		2.100
Prestroke solenoid			6.20
Prestroke solenoid Stroke mm Del. quantity	:		0.20
Stroke mm Del. quantity cm3/1000 strokes	:		174.0
Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes	:	+-	174.0
Stroke mm Del. quantity cm3/1000 strokes Tolerance	•	<del></del>	174.0 4.0
Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance	•		174.0 4.0
Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt	:	+	174.0 4.0
Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt	•	+	174.0 4.0 8.0 300 1.500
Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoid Stroke mm	•	+	174.0 4.0 8.0 300 1.500 0.060
Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes	•	+	174.0 4.0 8.0 300 1.500 0.060 0.080
Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000s.  TEST POINT L1  Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance	•	+	174.0 4.0 8.0 300 1.500 0.060 0.080 7.20 36.0

Check tolerance cm3/1000S.	:	12.0	
STARTING FUEL DEL	IVERY	,	
Rated speed rpm	:	100	
Uact V	:	2.450	
Prestroke solenoi	d		
Stroke mm	:	7.00	
Del. quantity			
cm3/1000 strokes	:	183.0	
Tolerance			
cm3/1900 strokes	: +-	10.0	
Check tolerance			
cm3/1000s.	: +-	14.0	

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil : 23.01.97 : ISO 4113

Combination No. : 0 402 798 201

Injection pump

Pump designation : PES8H120/720LS1009

EP type number : 0 412 728 202

Governor

Governer design. : RE33

Governer no. : 0 421 890 368

Cust. part No. : 1364711

Customer-spec. information

Customer : SCANIA

: DSC 1413/15 Motor

: 390.0 Power KW

### TEST BENCH REQUIREMENTS

Inlet line : 4(EHAB)

Test oil inlet

temp. °C 40

Tolerance °C : + 2.0

Overflow valve : 2 417 413 082

3.0 Inlet press. bar :

Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 105

Opening pressure

bar 208.5

Tolerance bar : **←** 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0 x inside diameter : 3.0 x length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : +- 1.0

: 8.00 Prestroke mm Tolerance mm : +- 0.05

Check

tolerance mm : **←** 0.10

Rack travel in mm: 10.50 Tolerance mm :  $\leftarrow$  0.50

: 1-2-7-3-4 Firing order

: - 5- 6- 8

: 0-45-90-135-180 Phasing

: -225-270-315 : **←** 0.50 Tolerance

Check

tolerance °NW : + 0.75

Start of delivery blocking

Tolerance : **←** 0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

	+ CRT mm : 1,00
TESTING & SETTING RACK TRAVEL SENSOR POSITION	Starting position
	(dmud M)
Engine speed min-1: 0	Uact V : 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00
	+ Tolerance Volt : $+$ 0,115
Setting point	+ CRI mm : 19,00 + Tolerance mm : + 0,80
(P, R and H pump)	+ Toterance mm : + U,ou
Uact V : 3.100	Ţ
(KI mm : 13.00	+ ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05	+ (All P and R pumps not
Check	+ Hand M pumps)
tolerance mm : +/- 0.10	† Test with control rod
Check value	in stop position
(P, R and H pump)	+
., .,	+ Engine speed min-1: 60
	Amplitude V : 1.4 Tolerance V : +/- 0.6
Uact V : 1.700 CRT mm : 6.15	
CRT mm : 6.15 Tolerance mm : +/- 0.25	+ Check + tolerance V : +/- 1.20
Check	1 toterance v : +/- 1.20
tolerance mm : +/- 0.30	Engine speed min-1: 600
	+ Difference
	+ Amplitude to
Setting point	Amplitude V : max.1.4
(mpump)	Ī
Uact V : 3.100	
CRT mm : 12.50	(c) INJECTION PUMP WITH POSITIONER
Tolerance mm : +/- 0.05	+
Check	+ TEST POINT V1
tolerance mm : +/- 0.10	+ Rated speed rpm : 700
Check value	+ Uact V : 3.150
(M pump)	+ Prestroke solenoid
	+ Stroke mm : 7.60
Uact V : 1.700	+ Del. quantity
CRT mm : 5.50	- cm3/1000 strokes : 344.5
Tolerance mm : +/- 0.25 Check	+ Tolerance + cm3/1000 strokes : +- 1.0
tolerance mm : +/- 0.30	Check tolerance
to cot arrow man	+  cm3/1000S. : + 6.0
Stop position	Spreed
(P, R and H pump)	+ Tolerance
Uact V : Value with	+ cm3/1000 strokes : 8.0 + Check tolerance
deenergised adjusting magnet	- cm3/1000s. : 12.0
and control rod in	FUEL DELIVERY CHARACTERISTICS
stop position.	+
CRT mm : 0.75	+
Tolerance mm : +/- 0.25	Rated speed rpm : 950
Check tolerance mm : +/- 0.35	+ Uact V : 3.450 + Prestroke solenoid
toter drive (III) . T/- U.33	+ Stroke mm : 8.20
Stop position	Del. quantity
(M pump)	+ cm3/1000 strokes : 365.0
Uact V : 0,720	+ Tolerance
Tolerance Volt : +- 0,065	+ cm3/1000 strokes : +- 4.0

Check tole	erance		
cm3/1000S	. :	+-	7.0

# TEST POINT L1

Rated speed rpm Uact V	:		250 1,400
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.060
Prestroke solenoi	d		
Stroke mm	:		9.50
Del. quantity			
cm3/1000 strokes	:		31.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		4.0
Check tolerance			
cm3/1000s.	:		8.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 11.02.97 : ISO 4113

Combination No. : 0 402 798 803

Injection pump

Pump designation : PES8P120A920/4LS7336

EP type number : 0 412 728 813

Governor

Governer design. : RE30

Governer no.

: 0 421 890 034

Cust. part No. : 313 GC 5209

Customer-spec. information Customer : MACK : E9-550 Motor Power KW : 410.0

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C

40

Tolerance °C

: + 2.0

Overflow valve : 2 417 413 086

Inlet press. bar :

2.0

Tolerance bar

: +- 0.1

Test nozzle holde

assembly

: 1 688 901 103

Opening pressure

208.5

Tolerance bar

: <del>+-</del> 1.5

Test lines

: 1 680 750 008

Outside diameter : 6.0

M25

x inside diameter : 2.0 x length mm :

600

**REMARKS** 

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : + 1.0

Prestroke mm 3.30 : +- 0.05 Tolerance mm

Check

: +- 0.10 tolerance mm

Rack travel in mm : 10.50 : +- 0.20 Tolerance mm

: 1-2-7-8-4 :-5-6-3 Firing order

: 0-45-90-135-180 Phasing

: -225-270-315

Tolerance

: +- 0.30

Check

tolerance °NW : +- 0.75

Start of delivery blocking

Tolerance : + - 0.50

Check

tolerance °NW : +- 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR **POSITION** Engine speed min-1: Setting point (P, R and H pump) : 3.100 : 13.00 Uact V CRT mm : +/- 0.05 Tolerance mm Check tolerance mm : +/- 0.10 Check value (P, R and H pump) 1.700 Uact V CRT mm 6.15 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Setting point (M pump) 3.100 Uact V 12.50 CRT mm Tolerance mm :  $\pm -0.05$ Check tolerance mm : +/- 0.10 Check value (qmuq M) 1.700 Uact V 5.50 CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm$  0.30 Stop position (P, R and H pump) : Value with Uact V deenergised adjusting magnet and control rod in stop position. : 0.75 CRT mm : +/- 0.25 Tolerance mm Check : +/- 0.35 tolerance mm Stop position (M pump) Uact V 0,720

: 1,00 CRT mm Starting position (qmuq M) Uact V : 4,500 Tolerance Volt : +- 0,115 CRT mm 19,00 Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 900 Uact V 2.950 Del. quantity cm3/1000 strokes : 303.0 Tolerance cm3/1000 strokes : +- 1.0Check tolerance cm3/1000s. Spreed Tolerance cm3/1000 strokes : 7.0 Check tolerance cm3/1000s. 11.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 625 Uact V 2.880 Del. quantity cm3/1000 strokes : 339.5 Tolerance cm3/1000 strokes : +- 5.0Check tolerance cm3/1000s. : +- 8.0 Spreed

Tolerance Volt : + 0,065

Tolerance		
cm3/1000 strokes	:	12.0
Check tolerance		
cm3/1000s.	:	16.0

# TEST POINT L1

Rated speed rpm	:		325
Uact V	:		1.340
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.070
Del. quantity			
cm3/1000 strokes	:		27.0
Tolerance			
cm3/1000 strokes	;	· + -(.	3.0
Spreed			
Tolerance			
cm3/1000 strokes	:		8.0
Check tolerance			
cm3/1000s	•		12.0

# STARTING FUEL DELIVERY

Rated speed rpm	:	100
Uact V	:	4.700
Del. quantity		
cm3/1000 strokes	:	185.0
Tolerance		
cm3/1000 strokes	: +-	15.0
Check tolerance		
cm3/1000S.	; +-	20.0
Spreed		
Tolerance		
cm3/1000 strokes	:	40.0
Check tolerance		
cm3/1000s.	:	45.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 23.07.96 : ISO 4113

Combination No. : 0 402 996 306

Injection pump

Pump designation : PES6P120A720RS8512

EP type number

: 0 412 926 209

Governor

Governer design. : RE30

Governer no.

: 0 421 890 023

Cust. part No. : 313 GC 5217 P3

Customer-spec. information : MACK Customer

Motor

: E7

## TEST BENCH REQUIREMENTS

Inlet line

: 4.2

Test oil inlet

temp. °C

Tolerance 'C

2.0

Overflow valve

: 2 417 413 084

Inlet press. bar :

3.0

Tolerance bar

: +- 0.1

Test nozzle holde

: 1 688 901 103

Opening pressure

bar

208.5

Tolerance bar

: **←** 1.5

assembly

Test lines

: 1 680 759 008

Outside diameter : 6.0

M28

x inside diameter: 2.0

x length mm

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar : +- 1.0

Prestroke mm : +- 0.05 Tolerance mm

Check

: +- 0.10 tolerance mm

Rack travel in mm : 12.00

Tolerance mm : +- 0.20

Firing order : 1-5-3-6-2-

: 4

: 0-60-120-180-240 Phasing

: -300

: +- 0.30 Tolerance

Check

tolerance °NW

: **←** 0.75

Start of delivery blocking

Tolerance : +- 0.50

Check

: +- 0.75 tolerance °NW

Barrel no.

: 1

(B) POSITIONER TESTING

Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V : CRT mm : 3.100 13.00 : +/- 0.05 Tolerance mm Check tolerance mm : +/- 0.10 Check value (P, R and H pump) : 1.700 : 6.15 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm$  +/- 0.30 Setting point (qmuq M) : 3.100 : 12.50 Uact V 3.100 CRT mm : +/- 0.05 Tolerance mm Check tolerance mm : +/- 0.10 Check value (qmuq M) : 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm - 0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. : 0.75 CRT mm : +/- 0.25 Tolerance mm Check tolerance mm : +/- 0.35 Stop position (M pump) Uact V : 0,720

Tolerance Volt : + 0,065 CRT mm 1,00 Starting position (M pump) Uact V : 4,500 : +- 0,115 Tolerance Volt : 19,00 : + 0,80 CRT mm Tolerance mm ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 1.4 Amplitude V : Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 900 Uact V 3.050 Del. quantity cm3/1000 strokes : 310.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000S. : +- 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 14.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : Uact V : 625 3.260 Del. quantity cm3/1000 strokes : 392.0 Tolerance cm3/1000 strokes : +- 10.0 Check tolerance : +- 12.0 cm3/1000s. Spreed

Tolerance		
cm3/1000 strokes	:	16.0
Check tolerance		
cm3/1000s.	:	18.0

# TEST POINT L1

Rated speed rpm Uact V Tolerance Volt	:	325 1.310 + 0.060
Check tolerance Volt	•	<b>←</b> 0.070
Del. quantity cm3/1000 strokes		33.0
Tolerance	•	33.3
cm3/1000 strokes Spreed	:	<b>←</b> 3.0
Tolerance cm3/1000 strokes		6.0
Check tolerance	•	0.0
cm3/1000S.	:	14.0

## STARTING FUEL DELIVERY

Rated speed rpm	:	100	
Uact V	:	4.700	
Del. quantity			
cm3/1000 strokes	:	195.0	
Tolerance			
cm3/1000 strokes	: +-	19.0	
Check tolerance			
cm3/1000s.	: +-	22.0	
Spreed			
Tolerance			
cm3/1000 strokes	:	<b>4</b> 0.0	
Check tolerance			
cm3/1000s.	:	50.0	

## Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 08.10.96 : ISO 4113

Combination No. : 0 402 996 311

Injection pump

Pump designation : PES6P120A720RS8512

EP type number : 0 412 926 214

Governor

Governer design. : RE30

Governer no.

: 0 421 890 024

Cust. part No. : 313 GC 5225 P2

Customer—spec. information : MACK Customer Motor : E7

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C

Tolerance °C

: +- 2.0

Overflow valve : 3 413 359 008

Inlet press. bar :

3.0

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 103

Opening pressure

bar

208.5

Tolerance bar

: **←** 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

NO3

x inside diameter : 2.0

x length mm :

600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 17.0 Tolerance bar : + 1.0

Prestroke mm

: 4.20

Tolerance mm

: +- 0.05

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 12.00

Tolerance mm : +- 0.20

Firing order

: 1-5-3-6-2-

: 4

Phasing

: 0-60-120-180-240

: -300

Start of delivery blocking

Tolerance

: +- 0.50

Check

tolerance °NW

: +<del>-</del> 0.75

Barrel no. : 1

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR

POSITION

Engine speed min-1: 0	+ (M pump) + Uact V : 4,500
engine speed with 1.	+ Uact V : 4,500 + Tolerance Volt : +- 0,115
Setting point	CRT mm : 19,00
(P, R and H pump)	+ Tolerance mm : $+$ 0,80
	+
Uact V : 3.100	+
CRT mm : 13.00	+ ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05	(All P and R pumps not
Check tolerance mm : +/- 0.10	+ H and M pumps)
toterance min . 47° 0.10	Test with control rod
Check value	in stop position
(P, R and H pump)	+
	+ Engine speed min-1: 60
	+ Amplitude V : 1.4 + Tolerance V : +/- 0.6
Uact V : 1.700 CRT mm : 6.15	
CRT mm : 6.15 Tolerance mm : +/- 0.25	+ Check
	+ tolerance V : +/- 1.20
Check tolerance mm : +/- 0.30	Engine speed min-1: 600
totel affect and	+ Difference
	Amplitude to
Setting point	+ Amplitude V : max.1.4
(M pump)	†
7.400	†
Uact V : 3.100 CRT mm : 12.50	(C) INJECTION PUMP WITH POSITIONER
Tolerance mm : +/- 0.05	T (C) INJECTION POINT WITH POSTITIONER
Check	+ TEST POINT V1
tolerance mm : +/- 0.10	1
	Rated speed rpm : 900
Check value	+ Uact V : 3.050
(Mipump)	+ Del. quantity
Hash V . 1 700	+ cm3/1000 strokes : 310.0
Uact V : 1.700 CRT mm : 5.50	+ Tolerance + cm3/1000 strokes : +- 1.0
Tolerance mm : +/- 0.25	Check tolerance
Check	+ cm3/1000s. : + 5.0
tolerance mm : +/- 0.30	+ Spreed
	+ Tolerance
Stop position	+ cm3/1000 strokes : 8.0
(P, R and H pump)	+ Check tolerance
Uact V : Value with	+ cm3/1000s. : 14.0 + FUEL DELIVERY CHARACTERISTICS
deenergised adjusting magnet	T TOEL DELIVER! CHARACTERISTICS
and control rod in	
stop position.	Rated speed rpm : 625
CRT mm : 0.75	+ Uact V : 3.260
Tolerance mm : +/- 0.25	+ Del. quantity
Check	+ cm3/1000 strokes : 392.0
tolerance mm : +/- 0.35	+ Tolerance
Stop position	cm3/1000 strokes : +- 10.0 Check tolerance
(M pump)	- cm3/1000s. : +- 12.0
Uact V : 0,720	Spreed
Tolerance Volt : + 0,065	+ Tolerance
CRT mm : 1,00	+ cm3/1000 strokes : 16.0
	+ Check tolerance
Starting position	+ cm3/1000s. : 18.0

# TEST POINT L1

Rated speed rpm Rated speed rpm Uact V	:		325 325 1.310
Uact V	:		1.310
Tolerance Volt	:	+-	0.060
Check tolerance			
Volt	:	+-	0.070
Del. quantity			
cm3/1000 strokes	:		<b>33</b> .0
Del. quantity			
cm3/1000 strokes	:		33.0
Tolerance			7.0
cm3/1000 strokes	:	+-	3.0
Tolerance			
cm3/1000 strokes	:	+-	3.0
Spreed			
Tolerance			
511157 1555 5 C. C. C.	:		6.0
Tolerance			
01137 1000 311 01100	:		6.0
Check tolerance			4/ 0
cm3/1000s.	:		14.0
Check tolerance			1/ C
cm3/1000s.	:		14.0

## STARTING FUEL DELIVERY

Rated speed rpm	: 100
Uact V	: 4.700
Del. quantity	405.0
cm3/1000 strokes	: 195.0
Tolerance	: <del>+-</del> 19.0
cm3/1000 strokes	: +- 19.0
Check tolerance	. 22.0
cm3/1000S.	: +- 22.0
Spreed	
Tolerance	
cm3/1000 strokes	: 40.0
Check tolerance	
cm3/1000s.	: 50.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

: 05.02.97 Edition Test oil : ISO 4113

Combination No. : 0 402 690 801

Injection pump

Pump designation : PE12P120A520LS7907

EP type number : 0 412 620 849

Governor

Governer design. : RE30

: 0 421 890 041 Governer no.

Cust. part No. : 0260745202

Customer-spec. information

: MTU Customer

: 12V183TE52K Motor

: 846.0 Power KW

### TEST BENCH REQUIREMENTS

Inlet line : 3.1/3.2

Test oil inlet

temp. °C 40 : +- 2.0 Tolerance °C

Overflow valve : 2 417 413 077

Inlet press. bar : 2.0 : **←** 0.1 Tolerance bar

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

208.5 bar : +- 1.5 Tolerance bar

Test lines : 1 680 750 075

Outside diameter : 8.0

N06

x inside diameter: 3.0 x Length mm : 1000

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : + 1.0

4.05 Prestroke mm : + - 0.05Tolerance mm

Check

tolerance mm : + 0.10

20.50 Rack travel in mm : Tolerance mm : **←** 0.50

: 12- 1- 5- 9- 8 Firing order

> : - 3- 4- 11- 10 : - 2- 6- 7

: 0-45-60-105-120 Phasing

: -165-180-225-240 : -285-300-345

: +- 0.50 Tolerance

Check

tolerance °NW : +- 0.75

## Start of delivery mark

: +- 0.10Tolerance

Check

: +- 0.75 tolerance °NW

Barrel no. : 12

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 3.100 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Uact V CRT mm : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 6.15 Check tolerance mm : +/- 0.30 Setting point (m pump) : 3.100 : 12.50 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check : +/- 0.10tolerance mm Check value (M pump) 1.700 Uact V CRT mm : 5.50 Tolerance mm : +/- 0.25 5.50 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm

tolerance mm :  $\pm -0.35$ Stop position (M pump) Uact V : 0,720 Tolerance Volt : + 0,065 CRT mm 1,00 Starting position (M pump) : 4,500 Uact V Tolerance Volt : +- 0,115 : 19,00 CRT mm Tolerance mm :  $\leftarrow$  0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60
Amplitude V : 1.4
Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP with POSITIONER TEST POINT V1 Rated speed rpm : 1200 Uact V 3.100 Del. quantity cm3/1000 strokes : 313.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +-Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0 FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 750 Uact V : Del. quantity 3.100 cm3/1000 strokes : 353.0

Check

Tolerance mm : +/- 0.25

Tolerance cm3/1000 strokes : +- 4.0 Check tolerance cm3/1000s. : +- 8.0

## TEST POINT L1

Rated speed rpm 300 1.350 Uact V Tolerance Volt : +- 0.060 Check tolerance Volt : +- 0.060 Del. quantity cm3/1000 strokes : 19.0 Tolerance cm3/1000 strokes : +- 3.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. 12.0

## STARTING FUEL DELIVERY

Rated speed rpm : 100
Uact V : 3.600
Del. quantity
cm3/1000 strokes : 445.0
Tolerance
cm3/1000 strokes : +- 20.0
Check tolerance
cm3/1000s. : +- 24.0

#### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 31.01.97 Test oil : ISO 4113

Combination No. : 0 402 899 300

Injection pump

Pump designation : PE10P120A520LS8519

EP type number : 0 412 829 201

Governor

Governer design. : RE30

Governer no. : 0 421 890 036

Cust. part No. : 51.11103-7560

Customer—spec. information

Customer : MAN
Motor : D 2840 LF 20
Power KW : 441.0

## TEST BENCH REQUIREMENTS

Inlet line : 3.1

Test oil inlet

temp. °C : 40 Tolerance °C :  $\leftarrow$  2.0

Overflow valve : 2 417 413 073

Inlet press. bar : 3.0 Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

: 208.5 bar Tolerance bar : +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter : 3.0 x length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : ← 1.0

Prestroke mm : 5.95 Tolerance mm : + 0.05

Check

: **←** 0.10 tolerance mm

Rack travel in mm : 13.00

Tolerance mm : +- 0.50

: 10- 9- 4- 1- 8 Firing order

: - 7- 6- 3- 5 : - 2

Phasing : 0-45-72-117-144

: -189-216-261-288

: -333

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

### Start of delivery blocking

Tolerance : +- 0.10

Check

tolerance °NW : **←** 0.75

Barrel no. : 10

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION
Engine speed min-1: 0
Setting point (P, R and H pump)
Uact V : 3.100 CRT mm : 13.00 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10
Check value (P, R and H pump)
Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Setting point (M pump)
Uact V : 3.100 CRT mm : 12.50 Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10
Check value (M pump)
Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30
Stop position (P, R and H pump)
Uact V : Value with deenergised adjusting magnet and control rod in
stop position.  CRT mm : 0.75  Tolerance mm : +/- 0.25  Check
tolerance mm : +/- 0.35

: 0,720

Tolerance Volt : +- 0,065 CRT mm : 1,00
Starting position (M pump) Uact V : 4,500 Tolerance Volt : + 0,115 CRT mm : 19,00 Tolerance mm : + 0,80
ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps)
Test with control rod in stop position
Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20
Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4
(C) INJECTION PUMP WITH POSITIONER
(C) INJECTION PUMP WITH POSITIONER TEST POINT V1
TEST POINT V1  Rated speed rpm : 950 Uact V : 3.100 Del. quantity cm3/1000 strokes : 270.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance
TEST POINT V1  Rated speed rpm : 950 Uact V : 3.100 Del. quantity cm3/1000 strokes : 270.0 Tolerance cm3/1000 strokes : + 1.0 Check tolerance cm3/1000s. : + 4.0 Spreed Tolerance cm3/1000 strokes : 8.0

Stop position (M pump) Uact V

Check tolerance 12.0 cm3/1000S. 750 Rated speed rpm Uart V 3.100 Dec. quantity cm3/1000 strokes : 291.0 Tolerance cm3/1000 strokes :  $\leftarrow$  3.0 Check tolerance cm3/1000S. : +- 6.0 TEST POINT L1 300 Rated speed rpm 1.540 Uact V Tolerance Volt : + 0.060Check tolerance : ← 0.080 Volt Del. quantity cm3/1000 strokes : 33.0 Tolerance

## STARTING FUEL DELIVERY

cm3/1000 strokes :

Check tolerance

cm3/1000S.

Spreed Tolerance

cm3/1000 strokes :  $\leftarrow$  3.0

8.0

12.0

Rated speed rpm : 100
Uact V : 2.440
Del. quantity
cm3/1000 strokes : 120.0
Tolerance
cm3/1000 strokes : + 8.0
Check tolerance
cm3/1000S. : + 12.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil : 27.02.97 : ISO 4113

Combination No. : 0 402 696 031

Injection pump

Pump designation : PE6H12O/32OLS4 EP type number : 0 412 626 001

Governor

Governer design. : RE36

Governer no. : 0 421 890 353

Cust. part No. :

Customer-spec. information

Customer : MB-NFZ

: OM 441 LA

Motor

Power KW

: 250.0

### TEST BENCH REQUIREMENTS

Inlet line : 3.2 ELAB

Test oil inlet

temp. °C

40

Tolerance °C

: +- 2.0

Overflow valve : 2 417 413 082

Inlet press. bar :

3.0

Tolerance bar : + 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

: 208.5

Tolerance bar

: +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

N12

x inside diameter :

x length mm :

3.0 600

**REMARKS** 

Pump-specific values in Section (B)

must be observed!

(A) INJECTION PUMP SETTINGS

No basic setting.

Setting of constant delivery

under Section C.

BEGINNING OF DELIVERY

Test pressure bar : 26.0

Tolerance bar : +- 1.0

Prestroke mm

: 7.00 : + 0.05 : +- 0.05 Tolerance mm

Check

tolerance mm :  $\leftarrow$  0.10

Rack travel in mm : 10.50

Tolerance mm : +- 0.50

: 6-3-5-2-4-Firing order

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance °NW : **←** 0.75

Start of delivery mark

: **←** 0.10 Tolerance

Check

tolerance °NW : +- 0.75

Barrel no. : 6

(B) POSITIONER TESTING

Warm-up time: 3 minutes at

n=600 min-1, Uact = 2.5 V

	+ CRT mm : 1,00
TESTING & SETTING RACK TRAVEL SENSOR	+
POSITION	+ Starting position
Engine speed min-1: 0	- Starting position - (M pump) - Uact V : 4,500 - Tolerance Volt : + 0,115 - CRT mm : 19,00 - Tolerance mm : + 0.80
	Tolerance Volt : + 0,115
Setting point (P, R and H pump)	+ CRT mm : 19,00 + Tolerance mm : +- 0,80
	T (Otter arrice will . 1 = 0,80
Uact V : 3.100 CRT mm : 13.00	+
CRT mm : 13.00 Tolerance mm : +/- 0.05	+ ENGINE-SPEED SENSOR + (All P and R pumps not
Check	H and M pumps)
tolerance mm : +/- 0.10	+
Check value	Test with control rod in stop position
(P, R and H pump)	T In stop position
, ,	Engine speed min-1: 60
Uact V : 1.700	+ Amplitude V : 1.4 + Tolerance V : +/- 0.6
CRT mm : 6.15	+ Check
Tolerance mm : +/- 0.25	tolerance V : +/- 1.20
Check tolerance mm : +/- 0.30	+ + Engine speed min-1: 600
toter differential	+ Difference
	+ Amplitude to
Setting point (M pump)	Amplitude V : max.1.4
(1) parily	Ţ
Uact V : 3.100 CRT mm : 12.50	
CDT 4 93 \$/1	
Tolerance mm : +/- 0.05	† (C) INJECTION PUMP WITH POSITIONER
Tolerance mm : +/- 0.05	+ TEST POINT V1
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10	TEST POINT V1
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10	TEST POINT V1 Rated speed rpm : 750
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (M pump)	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid Stroke mm : 7.00
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (M pump) Uact V : 1.700	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid Stroke mm : 7.00  Del. quantity
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid  Stroke mm : 7.00  Del. quantity  cm3/1000 strokes : 375.0
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid  Stroke mm : 7.00  Del. quantity  cm3/1000 strokes : 375.0  Tolerance  cm3/1000 strokes : +- 1.0
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid  Stroke mm : 7.00  Del. quantity  cm3/1000 strokes : 375.0  Tolerance  cm3/1000 strokes : + 1.0  Check tolerance
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid  Stroke mm : 7.00  Del. quantity  cm3/1000 strokes : 375.0  Tolerance  cm3/1000 strokes : +- 1.0
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid  Stroke mm : 7.00  Del. quantity  cm3/1000 strokes : 375.0  Tolerance  cm3/1000 strokes : + 1.0  Check tolerance  cm3/1000s : + 4.0  Spreed  Tolerance
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid Stroke mm : 7.00  Del. quantity cm3/1000 strokes : 375.0  Tolerance cm3/1000 strokes : +- 1.0  Check tolerance cm3/1000s. : +- 4.0  Spreed Tolerance cm3/1000 strokes : 5.0
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid Stroke mm : 7.00  Del. quantity cm3/1000 strokes : 375.0  Tolerance cm3/1000 strokes : +- 1.0  Check tolerance cm3/1000s. : +- 4.0  Spreed Tolerance cm3/1000 strokes : 5.0  Check tolerance
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in	TEST POINT V1  Rated speed rpm : 750  Uact V : 3.000  Prestroke solenoid Stroke mm : 7.00  Del. quantity cm3/1000 strokes : 375.0  Tolerance cm3/1000 strokes : +- 1.0  Check tolerance cm3/1000s. : +- 4.0  Spreed Tolerance cm3/1000 strokes : 5.0
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.	TEST POINT V1  Rated speed rpm : 750 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00 Del. quantity cm3/1000 strokes : 375.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75	TEST POINT V1  Rated speed rpm : 750 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00 Del. quantity cm3/1000 strokes : 375.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25 Check	Rated speed rpm : 750 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00 Del. quantity cm3/1000 strokes : 375.0 Tolerance cm3/1000s trokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1050 Uact V : 3.000
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25	Rated speed rpm : 750 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00 Del. quantity cm3/1000 strokes : 375.0 Tolerance cm3/1000s trokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1050 Uact V : 3.000 Prestroke solenoid
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35	Rated speed rpm : 750 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00 Del. quantity cm3/1000 strokes : 375.0 Tolerance cm3/1000strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000strokes : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1050 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35  Stop position	Rated speed rpm : 750 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00 Del. quantity cm3/1000 strokes : 375.0 Tolerance cm3/1000s trokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000 strokes : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1050 Uact V : 3.000 Prestroke solenoid
Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10  Check value (M pump)  Uact V : 1.700 CRT mm : 5.50 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30  Stop position (P, R and H pump)  Uact V : Value with deenergised adjusting magnet and control rod in stop position.  CRT mm : 0.75 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35	Rated speed rpm : 750 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00 Del. quantity cm3/1000 strokes : 375.0 Tolerance cm3/1000strokes : +- 1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000s. : 5.0 Check tolerance cm3/1000s. : 9.0 FUEL DELIVERY CHARACTERISTICS  Rated speed rpm : 1050 Uact V : 3.000 Prestroke solenoid Stroke mm : 7.00 Del. quantity

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Check tolerance cm3/1000s.	: +- 6.0
Rated speed rpm Uact V	: 550 : 2.800
Prestroke solenoi Stroke mm	d : 8.70
Del. quantity cm3/1000 strokes	: 367.0
Tolerance cm3/1000 strokes Check tolerance	: <b>←</b> 3.0
cm3/1000S.	: ← 6.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt	: 300 : 1.500 : ← 0.060
Check tolerance Volt Prestroke solenoic	: +- 0.060
Stroke mm	: 8.00
Del. quantity cm3/1000 strokes Tolerance	: 25.0
cm3/1000 strokes Spreed	: <b>←</b> 3.0
Tolerance cm3/1000 strokes	: 8.0
Check tolerance cm3/1000S.	: 12.0
STARTING FUEL DELI	IVERY
Rated speed rpm Uact V Prestroke solenoid	: 100 : 1.900
Stroke mm Del. quantity	: 10.00
cm3/1000 strokes Tolerance	: 106.0
cm3/1000 strokes	: +- 6.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 27.02.97 : ISO 4113

Combination No. : 0 402 696 032

Injection pump

Pump designation : PE6H12O/32OLS4-1 EP type number : 0 412 626 002

Governor

Governer design. : RE36

Governer no. : 0 421 890 359

Cust. part No. : 0250746402

Customer-spec. information Customer : MB-NFZ : OM 441 LA Motor

## TEST BENCH REQUIREMENTS

Inlet line : 3.2 ELAB

Test oil inlet

temp. °C

40

Tolerance °C

2.0

Overflow valve : 2 417 413 082

Inlet press. bar :

3.0

Tolerance bar : +- 0.1

Test nozzle holde

assembly

: 1 688 901 105

Opening pressure

bar

: 208.5

Tolerance bar

: +- 1.5

Test Lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar : Tolerance bar : + 1.0

Prestroke mm : 7.00 : +- 0.05 Tolerance mm Check

tolerance mm : +- 0.10

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 6-3-5-2-4-

: 1

: 0-60-120-180-240 Phasing

: -300

Tolerance : **←** 0.50

Check

tolerance °NW : + 0.75

Start of delivery mark

Tolerance : **←** 0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 6

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

	+ CRT mm : 1,00
TESTING & SETTING RACK TRAVEL SENSOR	+
POSITION	+ Starting position
	(M pump)  - Uact V : 4,500  - Tolerance Volt : + 0,115  - CRT mm : 19.00
Engine speed min-1: 0	+ Uact V : 4,500
	+ Tolerance Volt : + U,115
Setting point	1 0111 11111
(P, R and H pump)	+ Tolerance mm : + 0,80
11	†
Uact V : 3.100 CRT mm : 13.00	ENGINE-SPEED SENSOR
Tolerance mm : +/- 0.05	+ (All P and R pumps not
Check	H and M pumps)
tolerance mm : +/- 0.10	The and the pumps
totorario min	+ Test with control rod
Check value	in stop position
(P, R and H pump)	+
·	+ Engine speed min-1: 60
	Amplitude V : 1.4 + Tolerance V : +/- 0.6
Uact V : 1.700	
CRT mm : 6.15	+ Check
Tolerance mm : +/- 0.25	tolerance V : +/- 1.20
Check	†
tolerance mm : +/- 0.30	Engine speed min-1: 600
	+ Difference
Cathina maint	+ Amplitude to
Setting point	+ Amplitude V : max.1.4
(M pump)	I
Uact V : 3.100	
Uact V : 3.100 CRT mm : 12.50	(C) INJECTION PUMP WITH POSITIONER
Tolerance mm : +/- 0.05	1
Check	TEST POINT V1
tolerance mm : +/- 0.10	+
	+ Rated speed rpm : 750
Check value	+ Uact V : 3.000
(M pump)	+ Prestroke solenoid
	+ Stroke mm : 7.00 + Del. quantity
Uact V : 1.700	† Del. quantity
CRT mm : 5.50	+ cm3/1000 strokes : 375.0
Tolerance mm : +/- 0.25	+ Tolerance
Check	+ cm3/1000 strokes : +- 1.0
tolerance mm : +/- 0.30	+ Check tolerance
Stan magitian	+ cm3/1000S. : + 4.0 + Spreed
Stop position (P, R and H pump)	Tolerance
Cry it did it pullips	- cm3/1000 strokes : 5.0
Uact V : Value with	Check tolerance
deenergised adjusting magnet	+ cm3/1000s. : 9.0
and control rod in	+ FUEL DELIVERY CHARACTERISTICS
stop position.	+
CRT mm : 0.75	+
Tolerance mm : +/- 0.25	Rated speed rpm : 1050
Check	+ Uact V : 3.000
tolerance mm : +/~ 0.35	+ Prestroke solenoid
	+ Stroke mm : 7.00
Stop position	+ Del. quantity
(M pump)	+ cm3/1000 strokes : 339.0
Uact V : 0,720	+ Tolerance
Tolerance Volt : +- 0,065	+ cm3/1000 strokes : +- 3.0

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Check tolerance cm3/1000s.	: +- 6.0
Rated speed rpm Uact V Prestroke solenoi	: 550 : 2.800
Stroke mm	: 8.70
Del. quantity cm3/1000 strokes Tolerance	: 367.0
cm3/1000 strokes	: <del></del>
Check tolerance cm3/1000s.	: ← 6.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance	: 300 : 1.500 : +- 0.060
Volt	: <b>←</b> 0.060
Prestroke solenoid Stroke mm	d: 8.00
Del. quantity cm3/1000 strokes	: 25.0
Tolerance cm3/1000 strokes Spreed	: +- 3.0
Tolerance cm3/1000 strokes	: 8.0
Check tolerance cm3/1000s.	: 12.0
STARTING FUEL DELI	[VERY
Rated speed rpm Uact V	: 100 : 1.900
Prestroke solenoic Stroke mm	: 10.00
Del. quantity cm3/1000 strokes	: 106.0
Tolerance cm3/1000 strokes	: <b>←</b> 6.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition : 27.02.97 : ISO 4113 Test oil

Combination No. : 0 402 698 031

Injection pump

Pump designation : PE8H120/320LS3 EP type number : 0 412 628 001

Governor

Governer design. : RE36

Governer no. : 0 421 890 353

Cust. part No. :

Customer-spec. information Customer : MB-NFZ : 0M 442 LA : 370.0 Motor Power KW

### TEST BENCH REQUIREMENTS

Inlet line : 3.2 ELAB

Test oil inlet

40 temp. °C Tolerance °C : + 2.0

Overflow valve : 2 417 413 082

Inlet press. bar : Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 105 assembly

Opening pressure

: 208.5 bar Tolerance bar : +- 1.5

Test lines : 1 680 750 089

Outside diameter : 8.0

x inside diameter: 3.0 x length mm : 600

## REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

tolerance mm

Test pressure bar : Tolerance bar : + 1.0

Prestroke mm : 7.00 Tolerance mm : + 0.05 Check : + 0.10

Rack travel in mm : 10.50 Tolerance mm :  $\leftarrow$  0.50

Firing order : 8-7-2-6-3

: - 5- 4- 1

Phasing : 0-45-90-135-180

: -225-270-315 Tolerance : +- 0.50

Check

tolerance  $^{\circ}NW$  :  $\leftarrow$  0.75

Start of delivery mark

Tolerance : +- 0.10

Check

tolerance °NW : +- 0.75

Barrel no. : 8

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: Setting point (P, R and H pump) : 3.100 : 13.00 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (P, R and H pump) 1.700 : Uact V 6.15 CRT mm : +/- 0.25 Tolerance mm Check tolerance mm :  $\pm - 0.30$ Setting point (qmuq M) : 3... 12.50 3.100 Uact V CRT min Tolerance mm : +/- 0.05 Check tolerance mm :  $\pm -0.10$ Check value (dmuq M) 1.700 Uact V : CRT mm 5.50 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Stop position (P, R and H pump) Uact V : Value with deenergised adjusting magnet and control rod in stop position. 0.75 CRT mm : +/- 0.25 Tolerance mm Check tolerance mm :  $\pm -0.35$ Stop position (amua M) Uact V 0,720 Tolerance Wolt : + 0,065

CRT mm : 1,00 Starting position (amuq M) Uact V 4,500 Tolerance Volt : +- 0,115 : 19,00 CRT mm Tolerance mm : +- 0,80 ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/-0.6Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm : 750 Uact V 2.800 Prestroke solenoid Stroke mm 7.40 Del. quantity cm3/1000 strokes : 341.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance 9.0 cm3/1000s.FUEL DELIVERY CHARACTERISTICS Rated speed rpm : 950 2.900 Uact V Prestroke solenoid Stroke mm : 8.00 Del. quantity cm3/1000 strokes : 333.0 Tolerance cm3/1000 strokes :  $\leftarrow$  3.0

Check tolerance cm3/1000S.	: +- 6.0
Rated speed rpm Uact V	: 550 : 2.700
Prestroke solenoid Stroke mm	: 9.50
Del. quantity cm3/1000 strokes Tolerance	: 351.0
cm3/1000 strokes	: ← 3.0
Check tolerance cm3/1000s.	: ← 6.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance Volt Prestroke solenoid Stroke mm Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000s.	: 300 : 1.500 : +- 0.060 : +- 0.060 d: 8.00 : 23.0 : +- 3.0 : 8.0 : 8.0
STARTING FUEL DELI	(VERY
Rated speed rpm Uact V Prestroke solenoid	: 100 : 1.900
Stroke mm	: 10.00
Del. quantity cm3/1000 strokes	: 108.0

### Note remarks

Refer to Service Info for test and adjustment instructions. See microcard(s) W400/...

Edition Test oil

: 06.03.97 : ISO 4113

Combination No. : 0 402 196 712

Injection pump

Pump designation : PES6P110A320RS3386

EP type number : 0 412 016 757

Governor

Governer design. : RE30

Governer no. : 0 421 890 044

Cust. part No. : RE 69563

Customer-spec. information Customer : DEERE : 6068HDW55 : 127.0 Motor Power KW

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp. °C : 40
Tolerance °C : + 2.0 40

Overflow valve : 2 417 413 077

Inlet press. bar : Tolerance bar : + 0.1

Test nozzle holde

: 1 688 901 101 assembly

Opening pressure

: 208.5 bar Tolerance bar : ← 1.5

Test lines : 1 680 750 015

Outside diameter : 6.0

x inside diameter: 3.0 x length mm : 600

### REMARKS

Pump-specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting. Setting of constant delivery under Section C.

## BEGINNING OF DELIVERY

Test pressure bar: 17.0 Tolerance bar : + 1.0

Check

tolerance mm : +- 0.10

Rack travel in mm: 10.50 Tolerance mm : +- 1.50

Firing order : 1-5-3-6-2-

: 0-60-120-180-240 Phasing

Start of delivery blocking

"NW after s.o.d. : 6.50 Tolerance :  $\leftarrow$  0.50 Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

and maximum rack

travel : 15.00 Tolerance mm :  $\leftarrow$  0.50 Difference ° CS : 2.00

(B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 V

TESTING & SETTING RACK TRAVEL SENSOR POSITION

Engine speed min-1:

Setting point (P, R and H pump)

: 3, 12 13,00 Uact V CRT mm 3,100 Tolerance mm : +/- 0.05 Check

tolerance mm : +/- 0.10

Check value (P, R and H pump)

: 1.700 : 6.15 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ 

Setting point (M pump)

Uact V CRT mm : 3.100 : 12.50 3.100 Tolerance mm : +/- 0.05 Check

tolerance mm : +/- 0.10

Check value (dmuq M)

: 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check

tolerance mm :  $\pm - 0.30$ 

Stop position (P, R and H pump)

: Value with Uact V

deenergised adjusting magnet and control rod in

stop position.

CRT mm 0.75 Tolerance mm : +/- 0.25

Check

tolerance mm :  $\pm -0.35$ 

Stop position (amua M)

Uact V 0.720 Tolerance Volt : ← 0,065 CRT mm

Starting position

(dmuq M)

Uact V 4,500 Tolerance Volt : +- 0,115 CRT mm : 19,00 Tolerance mm 03,0 -+:

ENGINE-SPEED SENSOR (All P and R pumps not H and M pumps)

Test with control rod in stop position

Engine speed min-1: 60 Amplitude V : 1.4 Tolerance V : +/- 0.6 Check

tolerance V : +/- 1.20

Engine speed min-1: 600

Difference

Amplitude to

Amplitude V : max.1.4

## (C) INJECTION PUMP WITH POSITIONER

### TEST POINT V1

Rated speed rpm : 1000 Uact V : 3.180 Del. quantity cm3/1000 strokes : 142.0 Tolerance cm3/1000 strokes :  $\leftarrow$  1.0 Check tolerance cm3/1000s. : +- 4.0 Spreed Tolerance cm3/1000 strokes : 5.0 Check tolerance cm3/1000s. FUEL DELIVERY CHARACTERISTICS

Rated speed rpm : 600 Uact V 3.180

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Del. quantity cm3/1000 strokes Tolerance cm3/1000 strokes Check tolerance cm3/1000S. Spreed Tolerance cm3/1000 strokes Check tolerance cm3/1000S.	: +- 3.0 : +- 6.0
Rated speed rpm Uact V Del. quantity	: 400 : 1.590
cm3/1000 strokes Tolerance	: 16.5
cm3/1000 strokes Check tolerance	: <del>-</del> 3.0
cm3/1000s. Spr <del>ee</del> d	: <del>+</del> 6.0
Tolerance cm3/1000 strokes	: 6.0
Check tolerance cm3/1000s.	: 10.0
TEST POINT L1	
Rated speed rpm Uact V Tolerance Volt Check tolerance	: 400 : 1.590 : + 0.060
Volt	: +- 0.060
STARTING FUEL DEL	IVERY
Rated speed rpm Uact V	: 100 : 4.600
Del. quantity cm3/1000 strokes	: 115.0
Tolerance cm3/1000 strokes	: +- 10.0
Check tolerance cm3/1000s.	: <del>+-</del> 13.0

### Note remarks

Refer to Service Info for test and adjustment instructions.
See microcard(s) W400/...

Edition : 10.03.97 Test oil : ISO 4113

Combination No. : 0 402 996 307

Injection pump

Pump designation : PES6P120A720RS8512

: -2

EP type number : 0 412 926 212

Governor

Governer design. : RE30

Governer no. : 0 421 890 024

Cust. part No. : CCEP 5156 66-242

Customer-spec. information

Customer : RENAULT V.I.
Motor : 062465A42B42C42

### TEST BENCH REQUIREMENTS

Inlet line : 4.2

Test oil inlet

temp.  $^{\circ}$ C : 40 Tolerance  $^{\circ}$ C : +- 2.0

Overflow valve : 2 417 413 084

Inlet press. bar : 3.0 Tolerance bar : + 0.1

Test nozzle holde

assembly : 1 688 901 103

Opening pressure

bar : 208.5 Tolerance bar : + 1.5

Test lines : 1 680 750 008

Outside diameter : 6.0

x inside diameter: 2.0 x length mm : 600

### **REMARKS**

Pump—specific values in Section (B) must be observed!

(A) INJECTION PUMP SETTINGS No basic setting.

Setting of constant delivery

under Section C.

### BEGINNING OF DELIVERY

Test pressure bar : 26.0 Tolerance bar : + 1.0

Prestroke mm : 4.25
Tolerance mm : +- 0.05
Check
tolerance mm : +- 0.10

Rack travel in mm : 12.00Tolerance mm : + 0.20

Firing order : 1-5-3-6-2-

4

Phasing : 0-60-120-180-240

: -300

Tolerance : +- 0.50

Check

tolerance °NW : +- 0.75

Start of delivery mark

°NW after s.o.d. : -0.15Tolerance : +0.50

Let ance

Check

tolerance °NW : +- 0.75

Barrel no. : 1

Beginning of delivery differende

betw. rack trav.

mm : 20.50

and maximum rack 12.00 travel Difference ° CS : 3.10 (B) POSITIONER TESTING Warm-up time: 3 minutes at n=600 min-1, Uact = 2.5 VTESTING & SETTING RACK TRAVEL SENSOR POSITION Engine speed min-1: 0 Setting point (P, R and H pump) : 3.100 : 13.00 Uact V 3.100 CRT mm Tolerance mm :  $\pm - 0.05$ Check tolerance mm : +/- 0.10 Check value (P, R and H pump) Uact V : 1.700 CRT mm : 6.15 Tolerance mm : +/- 0.25 Check tolerance mm :  $\pm -0.30$ Setting point (dmuq M) : 3.100 : 12.50 3.100 Uact V CRT mm Tolerance mm : +/- 0.05 Check tolerance mm : +/- 0.10 Check value (qmuq M) : 1.700 : 5.50 Uact V CRT mm Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.30

stop position. CRT mm 0.75 Tolerance mm : +/- 0.25 Check tolerance mm : +/- 0.35 Stop position (amua M) : 0,720 Uact V Tolerance Volt : +- 0,065 CRT mm Starting position (amua M) Uact V
Tolerance Volt : +- U/II/
: 19,00 Uact V : 4,500 : +- 0,80 Tolerance mm ENGINE-SPEED SENSOF (All P and R pumps not H and M pumps) Test with control rod in stop position Engine speed min-1: 60
Amplitude V : 1.4
Tolerance V : +/- 0.6 Check tolerance V : +/- 1.20 Engine speed min-1: 600 Difference Amplitude to Amplitude V : max.1.4 (C) INJECTION PUMP WITH POSITIONER TEST POINT V1 Rated speed rpm 900 Uact V 3.050 Del. quantity cm3/1000 strokes : 310.0 Tolerance cm3/1000 strokes : +- 1.0 Check tolerance cm3/1000s. : +- 5.0 Spreed Tolerance cm3/1000 strokes : 8.0 Check tolerance cm3/1000s. FUEL DELIVERY CHARACTERISTICS

and control rod in

Uact V

Stop position

(P, R and H pump)

: Value with deenergised adjusting magnet

speed rpm : 625 / : 3.260  quantity
/ : 3.260 Juantity
000 strokes : 392.0
nce 100 strokes : +- 10.0
100 strokes : +- 10.0 tolerance
100s. : +- 12.0
1
ince
000 strokes : 16.0
tolerance
100s. : 18.0
OINT L1
ATIA! F.I
speed rpm : 325
: 1.310
nce Volt : +- 0.060
tolerance
: +- 0.070
uantity OO strokes : 33.0
nce
00 strokes : +- 3.0
nce
00 strokes : 6.0
tolerance
00s. : 14.0
NG FUEL DELIVERY
speed rpm : 100
speed rpm : 100 : 4.700
uantity
00 strokes : 195.0
nce
00 strokes : +- 19.0
tolerance
00s. : +- 22.0
nce
00 strokes : 40.0
tolerance
00s. : 50.0

End of test specification sheet